

Performance Measurement and Signaling in the Humanitarian Marketplace

by

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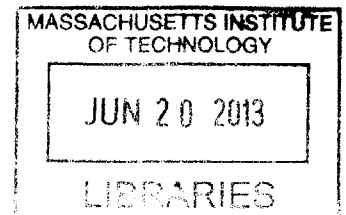
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Abstract

This thesis considers ways in which humanitarian organizations can evaluate their performance internally, signal their performance to others, and what this might mean for the humanitarian relief community as a whole. Part I demonstrates an approach by which humanitarian organizations can develop key performance indicators (KPIs) to measure the performance of their logistics and supply chain activities, using a non-profit specializing in the provision of medical relief as a case study. This thesis argues that a system of KPIs developed and analyzed by the organization can help improve operational performance, establish goals, and guide strategy.

Part II then examines high-level organizational trends in the United States international relief sector, and questions whether contemporary literature on such trends find support in data from the Internal Revenue Service (IRS). This thesis argues that the humanitarian “market” today exists in a newly competitive state defined by this paper as “response-leadership.” The humanitarian sector thus mirrors concentrated for-profit markets that embody the price-leadership model.

This thesis finally suggests governmental and institutional policies concerning performance measurement that, given the competitive nature of the humanitarian marketplace defined in Part II, may improve market mechanisms in this sector.

Thesis Supervisor: Jarrod Goentzel
Title: Director, MIT Humanitarian Response Lab

Acknowledgments

“Every life is many days, day after day. We walk through ourselves, meeting robbers, ghosts, giants, old men, young men, wives, widows, brothers-in-law. But always meeting ourselves.”

—Joyce (1934)

I owe great thanks to Jarrod for including me in his lab and offering guidance in my research. I am also indebted to Amy and Dan of Heart to Heart International for providing me a tremendous amount of information on their organization and operations—simply put, I could not have completed this project without them.

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Chapter 1

Introduction

“How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it. Of this kind is pity or compassion, the emotion which we feel for the misery of others, when we either see it, or are made to conceive it in a very lively manner. That we often derive sorrow from the sorrow of others, is a matter of fact too obvious to require any instances to prove it; for this sentiment, like all the other original passions of human nature, is by no means confined to the virtuous and humane, though they perhaps may feel it with the most exquisite sensibility. The greatest ruffian, the most hardened violator of the laws of society, is not altogether without it.”

—Smith (1790, pp. 4)

Consider the last time you donated money, food, or any sort of gift to a charitable cause. What led you to this decision? Did you give because you had some deep connection with the charity, or did they have a nifty advertising campaign? Was the cause local or far from home? Maybe you donated because you truly believe in the charity’s service, or maybe you donated to lower your tax bracket. Or perhaps you are purely altruistic by nature, and gave without even knowing or caring who

the donation was going to. Regardless of which organization you chose and why, did you ever consider, among the hundreds and if not thousands of charities providing similar services, which one performed “the best”?

This thesis considers the issue of performance and quality in regards to charitable action, specifically within what will occasionally be referred to as the “humanitarian marketplace.” There are two reasons why this is a topic of concern today. First, organizations that engage in humanitarian activities, such as disaster relief and international development, are becoming increasingly interested in the effectiveness and efficiency of the programs they pursue. Further, donors to these organizations, including governments, corporations, foundations, and individuals, are more concerned with how their money and gifts are impacting beneficiaries of aid. This ultimately leads to a problem of economics and information.¹ In particular, given the disconnect between the services of humanitarian organizations and their stakeholders, donors have difficulty in determining and comparing the quality of firms to which they would like to contribute. At the same time, humanitarian organizations themselves have difficulty in judging their own quality and conveying it to others. This thesis therefore aims to identify how humanitarian organizations can better judge their performance internally and what this means from an external market standpoint.

Part I of this thesis considers performance measurement from the perspective of the individual humanitarian organization. Chapter 2 provides a broad overview of the humanitarian environment, the importance of logistics activity to this sector, and

¹There are a number of classic papers concerning economics theory from which this thesis draws inspiration. Stigler (1961) considers the problem of information and the cost of search for consumers seeking to ascertain the price of products in a market. Akerlof (1970) and Shavell (1979) explore how markets with information asymmetries can lead to an overall reduction in product and service quality, and in some cases market failure. Nelson (1970) and Rothschild and Stiglitz (1976) examine the ways information about quality can have profound effects on the structure of competitive markets. Finally, Spence (1973) investigates how investing in the acquisition of “signals” can convey information to others by increasing the certainty of their perceptions.

the issues surrounding performance measurement in this context. Chapter 3 then introduces the concept of key performance indicators (KPIs) and illustrates an approach by which humanitarian organizations can develop logistics KPIs to internally define operational performance. In this chapter, this paper considers Heart to Heart International, a humanitarian organization specializing in the provision of medical relief, as a case study in how this approach can be practically implemented.

Part II then discusses the concepts of performance and quality in the context of the humanitarian marketplace. Chapter 4 compares market trends as depicted in academic and organizational literature with those identified using data derived from the Internal Revenue Service (IRS) Form 990, with the ultimate goal of characterizing the competitive nature of the humanitarian marketplace. Chapter 5 then examines potential performance measurement policies from institutional and governmental perspectives that focus on improving market mechanisms in this environment. Additionally, this chapter discusses whether KPIs used by humanitarian non-profits can serve as external signals of quality to stakeholders. Lastly, Chapter 6 completes this thesis by summarizing its conclusions and identifying further avenues of research.

Part I

Measuring the Performance of Humanitarian Relief Organizations

Chapter 2

Humanitarian Action, Logistics, and Performance

“Humanitarianism is the act of people helping people. It is a service, a calling, an expression of human solidarity. It involves not only a philosophy but also a set of deliverables. An expression of ethical concern, humanitarianism is also a business driven by market forces and by agencies seeking to maintain and expand market share. This arena has a few saints, a great many dedicated humanitarian professionals, and not a few hustling entrepreneurs, fly-by-nighters, freebooters, and purveyors of snake-oil.”

—Smillie and Minear (2004, pp. 11)

This chapter provides a broad overview of the international relief system, the importance of logistics to humanitarian activity, and the concerns that organizations face in attempting to measure the performance and quality of their operations. First, the concept of humanitarian relief, the actors involved, a brief history of humanitarian action, and the current state of philosophy in this sector are introduced. Second, logistics is defined as a science particularly important to humanitarian relief, and

the main processes and difficulties involved in humanitarian logistics are discussed. Finally, this chapter presents performance measurement in the humanitarian environment, the inherent difficulties that surround it, and current approaches used by humanitarian organizations and organizations in general to evaluate performance.

2.1 Humanitarianism and the international relief system

At the core of its philosophy, humanitarianism refers to people helping other people. It is an idea that is often presented in terms of the altruistic tendencies in man that, as Smith (1790) argues, exist inherently as a principle of nature. Altruism—the concern for the welfare of others—is a concept that has been discussed and theorized in a wide range of academic fields, including psychology (Batson, 1991), anthropology (Wright, 1994), and economics (Andreoni, 2006). In the humanitarian context, it connotes “individuals giving unto others without expecting anything in return, and potentially sacrificing something in the process” (Barnett and Weiss, 2008a, pp. 11).

2.1.1 What is humanitarian relief and who is involved?

Humanitarian relief is one of three subsets of foreign aid in general, the other two being technical aid and institution-building (Smith, 1990).¹ Specifically, humanitarian relief refers to “the aid and action designed to save lives, alleviate suffering and maintain and protect human dignity during and in the aftermath of emergencies” (Development Initiatives, 2012). What separates it from technical aid and

¹Technical aid concerns, for example, the support of training and education, population control, and basic physical infrastructure, while institution-building refers to the support of development programs that aim to strengthen local communities (Smith, 1990).

institution-building is that relief is short-term in nature and guided by the principles of humanity, impartiality, neutrality, and independence.²

Traditionally, humanitarian relief is associated with actions taken in response to humanitarian crises, such as the 2010 earthquake in Haiti and the current food crisis in the Sahel region of West Africa. This includes material relief assistance and services (e.g., shelter, water, and medicine), food provision, relief coordination, population protection, and other support activities (Development Initiatives, 2012). Additionally, humanitarian relief can include reconstruction and rehabilitation operations to repair pre-existing infrastructure post-crisis, as well as disaster prevention and preparedness (Development Initiatives, 2012).

Within the humanitarian aid sector there are five main sets of actors—United Nations institutions, governmental aid agencies, international non-governmental organizations (NGOs), members of the Red Cross and Red Crescent movements, and local NGOs based in the countries facing crisis (Smillie and Minear, 2004). Each actor in this environment has their own set of goals and processes, though these will often overlap. For instance, international NGOs, the general public, and governmental aid agencies, such as the United States Agency for International Development (USAID), will fund local and international NGOs to carry out relief work. Thus, the international relief system consists of a complicated array of network interactions, as depicted in Figure 2-1 and adapted from Macrae (2002, pp. 12). When specifically observing funding mechanisms of the aid sector, this can contribute to difficulties in following the flow of money as it trickles down the humanitarian chain from first

²Jean Pictet, former Vice President of the International Committee of the Red Cross (ICRC) and one of the main architects of the 1949 Geneva Conventions initially identified the seven principles of humanitarianism that are still cited today—humanity, impartiality, neutrality, independence, voluntary service, unity, and universality. The first four are considered to form the “core” humanitarian principles (Barnett and Weiss, 2008a).

level recipients of aid, through contracting organizations, en route to beneficiaries.

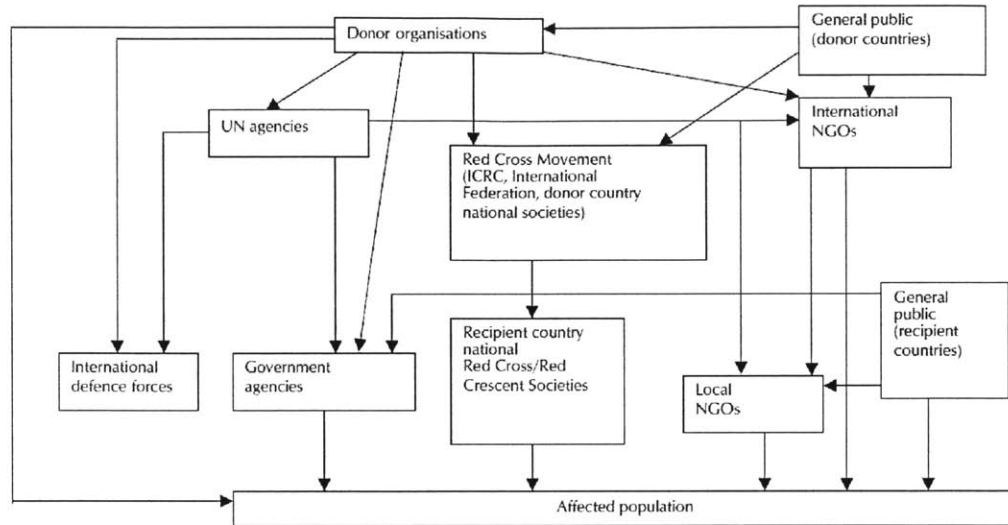


Figure 2-1: The international relief system

In particular, this thesis will focus on international non-profit NGOs operating in the United States,³ which will occasionally be referred to generically as “firms,” competing for funds in the humanitarian marketplace. There are a number of reasons for selecting this subset as a research focus. First, it would be problematic to generalize trends across a combination of local NGOs, international NGOs, government agencies, Red Cross and Red Crescent societies, and UN institutions. Second, of this group of actors, international NGOs are selected on the basis of their importance in the humanitarian sector—notably, approximately 60 percent of all humanitarian assistance funding is managed by international NGOs (Smillie and Minear, 2004). Third, *non-profit* NGOs are considered in specific, since the vast majority of human-

³The term “operating in the United States” refers to non-profit NGOs that receive tax-exempt status from the United States government. It is not to be confused with NGOs that are involved with humanitarian work within the United States.

itarian NGOs are founded as non-profits to better market themselves as purveyors of social goods and to claim tax-exempt status.⁴ Finally, this thesis only focuses on non-profit NGOs that operate in the United States, as the US maintains the most comprehensive repository of non-profit data in the world through IRS filings. Additionally, the United States and its donating public has consistently served as the largest donor to humanitarian causes in the world by a factor of three to four (Randel and German, 2002, pp. 20).

2.1.2 A brief history of humanitarian action

The philosophy of humanitarianism has changed dramatically over the past one hundred years, mostly in response to changing global socioeconomic and political environments. The three defining periods in the humanitarian sector, according to Barnett and Weiss (2008a), are from the early nineteenth century through World War II, from 1945 through the end of the Cold War, and from 1990 to today.

The early nineteenth century through World War II

The humanitarian system prior to World War II was largely grounded in religious ideologies, made up of intellectuals, politicians, jurists, and members of the clergy who “adopted the language of humanitarianism to describe their proposed social and political reforms and to push for public interventions to alleviate suffering and restore society’s moral basis” (Barnett and Weiss, 2008a, pp. 21). Additionally, some humanitarian relief organizations during this time period, such as Catholic Relief

⁴In addition to certain tax privileges, Glaeser (2006) summarizes the two other primary differences between non-profit and for-profit firms. First, non-profits are bounded by the nondistribution constraint, which prevents them from disbursing any profits to owners or employees. Second, non-profits do not have owners—their boards are self-perpetuating and not accountable to shareholders.

Services (CRS) and Caritas Internationalis, evolved out of overseas missionary activities, seeing their work as “straddling the church and the secular world, combining social and religious goals” (Stoddard, 2003, pp. 1). To this day, many of the largest and most influential NGOs provide religion as a basis for their work—for instance, World Vision International and Food For The Poor, two of the largest international relief NGOs in terms of revenue, are religiously-affiliated.

1945 through the end of the Cold War

The experience of two World Wars triggered a new period in humanitarianism in which many of the most familiar non- and inter-governmental organizations today came into being, such as Médecins Sans Frontières (MSF), Cooperative for Assistance and Relief Everywhere (CARE), and AmeriCares. Barnett and Weiss (2008a, pp. 23) argue that atrocities carried out during World War II, including the Holocaust, concentration camps, firebombings, and the use of nuclear weapons, empowered a call by diplomats and activists for “the protection of civilians, the dispossessed, and human dignity.” The end of World War II also saw the emergence of industrialized nations and what was to become the “third-world” or “global south” (Barnett and Weiss, 2008a, pp. 23). The combination of these two factors—war and inequality—provided a new awareness of global development and humanitarian issues.

1990 to today

The end of the Cold War saw a dramatic increase in the volume of humanitarian aid organizations and funding for a variety of reasons. First, Fearon (2008) suggests that the sharp rise in emergency aid during this period reflected a change in foreign policy amongst the world powers to that of “neotrusteeship,” or “postmodern impe-

rialism.” Neotrusteeship, as described by Fearon and Laitin (2004, pp. 7), involves the external “control over domestic political authority and basic economic functions [in other states]... by a hodgepodge of foreign powers, international and nongovernmental organizations (NGOs), and domestic institutions.” Fearon (2008) argues that neotrusteeship policies arose as the concept of development bled into that of security in the early 1990s—that is, spillover effects from conflicts in some states, such as refugees and economic instability, provided sufficient motivation for intervention by others.⁵ Thus, the rise of aid can be explained as a consequence of shifting foreign policy priorities, particularly in the United States and European Union.

Related to this line of reasoning, Barnett and Weiss (2008a, pp. 24) claim that the increase in humanitarian activity since the end of the Cold War was perpetuated by an expanded definition of a “threat to international peace and security,” which serves as a trigger to involve the United Nations (UN) Security Council:

“After the cold war—and in reaction to the growing perception that domestic conflict and civil wars were leaving hundreds of thousands of people at risk, creating mass flight, and destabilizing entire regions—the council authorized interventions on the grounds that war-induced disasters imperiled regional and international security.”

This change was brought on by a report issued in 1992 by then Secretary-General Boutros Boutros-Ghali, titled *An Agenda For Peace*, which put forth the idea that human security included social and economic determinants of violence in addition to the purely physical (Macrae, 2002).⁶ With this doctrine in place, states consider-

⁵Examples of foreign powers engaging in policies of neotrusteeship include United States and European interventions in Bosnia and Kosovo in the late 1990s, East Timor in 1999 and 2006, Sierra Leone from 1999 to 2002, Iraq from 2003 to 2011, and Afghanistan from 2001 until today.

⁶Macrae (2002) provides a complete explanation for how humanitarianism, development, and social issues merged with security into what she calls the “new security agenda.” There are three major implications that come with this new ideology. First, she argues that the international community lost leverage over internal conflicts as the United States and former Soviet Union withdrew

ing humanitarian and peacekeeping operations were therefore accompanied by (and perhaps emboldened by) a new legal justification to do so.

In addition to changes in the political environment, global awareness of humanitarian issues has grown due to an increase in the number of humanitarian organizations soliciting funds as well as improvements in technology. For example, Fearon (2008) argues that another explanation for the dramatic increase in aid besides shifting foreign policy priorities is that the humanitarian sector has self-expanded as a result of its highly competitive nature. Technological innovation has also played a significant impact by increasing international awareness of humanitarian causes, especially thanks to improvements in real-time media coverage⁷ and the Internet, which provides individuals better access to information about emergencies, disasters, and crises, as well as the humanitarian organizations that seek donations.

2.1.3 The current environment

The Development Initiatives (2012) report on global humanitarian assistance provides a comprehensive outlook regarding the scale and scope of humanitarian action today. For the most part, the overall level of spending is driven by large-scale disasters and conflicts that call upon the international community as a whole, including foreign governments, international NGOs, and military actors. In 2010, for instance, the earthquake in Haiti and massive floods in Pakistan drove up international spending on humanitarian aid by 23% over the previous year; however, the lack of a major

political and financial support from third-world states. Second, armed groups involved in conflicts today are respecting less and less the international rule of law, resulting in extreme violence against civilians as well as challenging humanitarian relief environments. Third, the variability in political and military responses to such conflicts has become virtually unpredictable, and as a consequence there is no clear basis for if, when, and how to intervene in another state's affairs.

⁷Bernard Kouchner, the founder of Médecins Sans Frontières (MSF), refers to the impact of the media on fundraising appeal as *la loi du tapage*, or “the law of hype” (Aldashev and Verdier, 2009).

crisis in the following year saw overall funding fall by 9%, from an estimated US\$18.8 billion in 2010 to US\$17.1 billion in 2011.⁸

Historically the United States has been the largest donor to humanitarian efforts, providing over a third of total relief funding from government sources between 2001 and 2010 (Development Initiatives, 2012). In 2010 the US government committed US\$4.9bn to humanitarian causes, followed by the European Union with US\$1.7bn and the United Kingdom with US\$943m (Development Initiatives, 2012, pp. 13).

Of all states receiving aid, those that are affected by conflict are given the most attention—on average, between 64 and 83 percent of international humanitarian assistance between 2001 and 2010 was given to countries in conflict or “post-conflict transition” (Development Initiatives, 2012). Over this same period, funding was largely concentrated among a small group of recipients, with the top 20 recipients of aid receiving 75% of the funding and the top 3 alone receiving 25% (Development Initiatives, 2012, pp. 29). Of course, international assistance varies not only by volume but also by type. In Afghanistan, for example, over one-third of humanitarian efforts go to reconstruction relief, while in Ethiopia the vast majority of relief (roughly 80%) is in the form of emergency food aid (Development Initiatives, 2012).

The United States in particular takes a pragmatic rather than idealistic approach when it comes to humanitarian aid. Following the end of World War II, the United States was initially “unapologetic about its use of aid for political purposes” (Stoddard, 2002, pp. 39-40). This mentality slightly subsided during the Cold War, yet reappeared during the 1990s when the US began experimenting with the concept of

⁸The bulk of humanitarian efforts in 2011 were made up of continued responses to either long-term crisis, such as in Sudan and Palestine, or immediate reconstruction relief, such as in Afghanistan and Haiti. The volume of humanitarian funding often travels sinusoidally in response to sudden disasters, conflicts, or other emergencies, yet consistently with an upwards trend due to what is referred to as the “ratchet-effect” (Development Initiatives, 2012; Macrae, 2002).

Table 2.1: Top 20 recipients of international humanitarian aid, 2001—2010

Rank	Country	Total Aid	Rank	Country	Total Aid
1	Sudan	US\$9.7bn	11	Kenya	US\$1.9bn
2	Palestine	US\$6.5	12	Sri Lanka	US\$1.8bn
3	Afghanistan	US\$5.6bn	13	Zimbabwe	US\$1.7bn
4	Ethiopia	US\$5.3bn	14	Lebanon	US\$1.7bn
5	Iraq	US\$5.2bn	15	Uganda	US\$1.6bn
6	Pakistan	US\$4.6bn	16	Chad	US\$1.4bn
7	Haiti	US\$3.7bn	17	Jordan	US\$1.3bn
8	Democratic Republic of the Congo	US\$3.7bn	18	Angola	US\$1.2bn
9	Somalia	US\$2.7bn	19	Burundi	US\$1.2bn
10	Indonesia	US\$2.4bn	20	Myanmar	US\$1bn

Source: Development Initiatives (2012, pp. 30)

using humanitarian means to establish security and peace in other parts of the world. The wars in Afghanistan and Iraq during the 2000s serve as clear examples where the US has used humanitarian efforts, specifically in reconstruction and development, in an effort to build democratic states that can function self-sufficiently.

This pragmatic attitude has also spilled over to NGOs that operate in the United States. Stoddard (2003) argues that, of the three historical strains of modern humanitarian action, US NGOs fall into the category of ‘Wilsonian,’ named for President Woodrow Wilson who used aid as a way to project US values and influence.

Wilsonian organizations, according to Stoddard (2003), have a “practical, operational bent,” as opposed to religious organizations, or ‘Dunantists,’ named for ICRC founder Henry Dunant, who position themselves outside of state interests. As a result, US humanitarian NGOs today are “focused on the logistical and technical tasks of aid and intent on maximizing efficiency within the short-term operational setting of an emergency” (Stoddard, 2003, pp. 2).

Other defining features of the current humanitarian environment include improved information technology, communications, and logistics capabilities (Barnett and Weiss, 2008a). Furthermore, in regards to funding, the philanthropic world as a whole took a significant hit in response to the 2007 and 2008 financial crisis. According to the Urban Institute, the largest declines in charitable giving occurred in 2008 and 2009, and while there was modest growth in 2010 and 2011, giving has not yet reached pre-recession levels (Blackwood et al., 2012, pp. 4). Of all types of charities, international and foreign affairs organizations experienced the most significant reduction in growth—from 2000 to 2005, revenues grew on average 71%; from 2005 to 2010, they grew only 11% (Blackwood et al., 2012, pp. 4).

2.1.4 Paradoxes in the international relief sector

Why give?

Contemporary humanitarian philosophy recognizes that humanitarian action is no longer considered a “moral necessity,” in large part due to the limited availability of resources to address crises as well as the complex and dangerous nature of humanitarian working environments (Barnett and Weiss, 2008a). In the same light, the idea that the contributions of individuals, corporations, foundations, and governments to humanitarian relief are devoid of all self-interest is, for the most part, abandoned.

Besides a real concern for the welfare of beneficiaries, donors to humanitarian causes give for three categories of reason—psychological comfort, business interests, and political influence.

In his work on the economics of philanthropy, James Andreoni highlights the difficulty in rationalizing self-interest, an economic assumption inherent to human behavior, with unselfish giving. In his own words (Andreoni, 2006, pp. 1204):

“Philanthropy is one of the greatest puzzles for economists. A science based on precepts of self-interested behavior does not easily accommodate behavior that is so clearly unselfish.”

To justify the existence of philanthropy, Andreoni (1989, 1990) develops a theory of impure altruism where, in an economic sense, one party transfers a form of welfare to another while deriving utility from the act of giving. Andreoni refers to this as “warm-glow giving,” and thus explains philanthropy to exist in a state somewhere between pure altruism and pure egoism. In stark terms, people give because it makes them feel good.

A number of authors also cite financial and business interests in charitable action. From an individual perspective, Andreoni (2006) highlights the fact that charity is tax deductible, and becomes particularly attractive to wealthy individuals who gain a higher marginal subsidy from philanthropy given progressive tax rates. Marx (1999) and Porter and Kramer (2002) argue that businesses themselves can target donations to meet corporate goals and objectives, improving the competitive context of the giving firm by demonstrating awareness and commitment to social causes. Further, Wang et al. (2008) identify a quantitative relationship between corporate philanthropic giving and financial performance, observing that philanthropy provides returns to the giving firm on a similar level with advertising and promotion.

Charitable contributions can also be made to impose political influence, particularly by donating governments. For instance, Stoddard (2002) argues that policymakers leveraged the North Korean famine in 1995 to extract political concessions in exchange for food aid, while in Serbia during the late 1990s both the United States and European Union targeted aid to specific municipalities in order to empower certain population segments. In regards to when humanitarian action is of interest to foreign governments, Smillie and Minear (2004) identify three “classes” of emergencies. A “first-class” emergency—like those in Bosnia and Kosovo in the 1990s, and Afghanistan and Iraq in the 2000s—constitute high-profile crises where a preeminent political or security interest is taken by one or more of the major powers. “Second-class” emergencies constitute more traditional kinds of crises that attract an intermediate level of interest and involvement. At the bottom of the spectrum lie “third-class” emergencies, where involvement is low due to a lack of interest or any other compelling reason for action. Ultimately, Smillie and Minear (2004) argue that the very existence of third-class emergencies demonstrates that the humanitarian system is in violation of its core principles.⁹

Aid abundance

Though many within and outside the humanitarian relief and development communities are aware that foreign aid is a scarce resource, there additionally exists

⁹Identifying ulterior motives for giving is not meant in any way to convince the reader that people do not give to humanitarian causes for reasons of kindness and compassion for their fellow man; however, it is meant to demonstrate that motivations of self-interest, business, and influence are also at play. This is important to understand when discussing the importance of performance measurement for humanitarian non-profits. Donors today rarely give for the sake of giving—instead, most expect some form of return for their charity and are therefore increasingly interested in the impact that specific humanitarian organizations can deliver. It should be noted that this trend is positive for recipients of aid—if the best organizations receive the majority of contributions, then more relief can be passed on to those in need.

concerns that procedures and standards of performance for humanitarian organizations leads to a term described by Tendler (1975) as “aid abundance.” The more familiar concept—that of “aid scarcity”—refers to the large gap between the amount of aid demanded and that which is supplied. Aid abundance, on the other hand, exists equally in this market and refers to the inefficient allocation of relief resources that result from the institutional environment from which aid is distributed.

Tendler argues that aid abundance has two distinct yet reinforcing causes. First, she observes that there is a tendency for both donors and recipients to gravitate toward projects with large foreign exchange components. As a result, the importation of equipment from the donor to the recipient country is encouraged, even though the recipient could have made the equipment itself. Second, and more importantly, Tendler (1975, pp. 56) notes that organizational bureaucracies favor large projects over small ones, largely due to the fact that the definition of output is often given in terms of the quantity of resources transferred. In her words:

“The output of [sic] public sector organization[s], that is, seems to have been defined in terms of the total amount of resources successfully transferred during any period; input is the staff work, measured in time, necessary to transfer a given amount... A larger project requires less staff time per dollar transferred than a smaller one, so there is a tendency for the financing organization to gravitate toward larger projects. This tendency exists, moreover, even in organizations not under the pressure of an annual appropriations funding mechanism — i.e., the need to ‘get rid of the money’ before the end of a fiscal year.”

Thus, humanitarian organizations are incentivized to maximize the distribution of resources, and not necessarily impact. In turn, the recipients of aid—including foreign governments and individuals themselves—are often unable to absorb what is given to them. Thus, when made available, aid is often distributed inefficiently.

Is humanitarian aid good?

Certainly the obvious answer to whether or not humanitarian aid is a beneficial good is yes, aid provides people who cannot be sufficiently supported by their own governments or communities the help they need when they need it most. At the same time, however, there are a number of complications in regards to the delivery of relief that pose serious problems for the humanitarian community.

For one, the way in which aid is delivered is important when considering its benefit to societies in the long-term. Aid that promises solutions in the short-term while ignoring the fundamental reasons for why states cannot support themselves can raise questions concerning the value of such relief. Barnett and Weiss (2008b, pp. 147-48) describe this mentality as being destructive to humanitarian efforts:

“... a strategy that delivers aid first and asks questions later (if ever) might be so focused on the highly visible short term that it can cause more harm than good to the populations that it seeks to serve. This was the situation faced by many aid workers in complex humanitarian emergencies. Aid not only saved lives, it also fueled conflict and repression by supporting repressive governments, feeding warring factions through theft or gatekeeping access to aid, helping to militarize refugee camps, enabling warring groups to exercise control over populations, legitimizing governments and rebels, and allowing outside states to appear to be doing something about a crisis without having to intervene in more effective ways... Aid, moreover, can increase distortions of the local economy, displace or discourage local economic activity, create a short-term hothouse aid economy, produce new kinds of dependencies, and reinforce existing political and economic inequalities.”

Zanotti (2010) provides a real world example of this occurring in the aftermath of the 2010 earthquake in Haiti. She argues that, during the lead-up to the crisis, international NGOs in Haiti aggravated the state's fragility by serving as substitutes for government institutions. As a consequence, NGOs compounded rather than

reduced the problems for the Haitian people as their own government was incapable of providing services and security within its domain post-disaster.

Additionally, humanitarian NGOs, like all organizations, can be fallible creations. An article from *The Economist* (1998) argues that non-profits face issues of accountability, finding competent line managers, and training that become more prevalent as these firms are more ingrained in society. Non-profits also face issues of transparency, high rates of employee turnover, and difficulties in coordination when responding to a crisis. In some cases, there have been instances of fraud and other behavioral issues amongst the largest and smallest humanitarian relief organizations. For instance, the UN's Oil-for-Food Programme, established in 1995 to allow Iraq to sell oil on the world market in exchange for humanitarian goods, suffered from widespread corruption and abuse in the form of kickbacks for oil sales contracts (Volcker et al., 2005); on the other end of the spectrum, humanitarian workers of 40 NGOs during the early 2000s were accused of extorting sex in exchange for aid supplies with over 1500 children and adults in West African refugee camps (Naik, 2002).¹⁰

2.2 Humanitarian logistics

Logistics serves a critical function in the delivery of humanitarian relief by bridging those in need with those that want to help. As the field of logistics and supply chain management has grown substantially in interest over the last few decades in the business world, humanitarian organizations have also been increasingly incorporating logistics concepts into their operations.

¹⁰It is important to note that even though high profile cases such as these force the humanitarian community and the public in general to ask questions about the benefits of aid, the overwhelming majority of relief activity is performed by good people with the intent of assisting those in need. Instead of raising controversy, this discussion is meant to highlight the distance created between donor and humanitarian relief provider.

2.2.1 Logistics and supply chain management

Russell (2005) notes that the term logistics signifies the optimization of physical, informational, and financial flows through a supply chain network. A typical supply chain consists of five broadly defined actors—suppliers, manufacturers, distributors, retailers, and customers. Logistics therefore concerns the efficient and effective flow of materials from suppliers, through each actor, en route to the final recipient.

It is useful to look at logistics from both a process and functional perspective. A process view concerns macro interactions between the actors in a supply chain. Typically this consists of customer order, replenishment, manufacturing, and procurement cycles. A functional view, on the other hand, looks at the more specific actions that are necessary to complete an order. These include purchasing and procurement, inventory control, warehousing, materials handling, order processing, transportation, customer service, and planning, amongst others (Caplice and Sheffi, 2012).

Recent academic literature on logistics explores its overall importance to business as well as how supply chains can be managed. For instance, Beamon (1998) cites the rising costs of manufacturing, shortened product life cycles, and the globalization of market economies as the foundation for increasing interest in supply chain management, and goes on to identify performance measurement, optimization, and modeling issues worthy of future research. Daugherty et al. (1998) argue for a strong link between logistics capabilities and customer satisfaction, specifically observing that personal products vendors who establish customer satisfaction and loyalty through logistics service acquire greater market share. Additionally, Vickery et al. (2003) observe that supply chain integration is indirectly related to firm financial performance through its impact on customer service.

2.2.2 Humanitarian logistics and complicating factors

Logistics serves as one of the most important functions of humanitarian relief organizations, in addition to, for instance marketing and fundraising, monitoring and evaluation, and customer and supplier relations. In the humanitarian context, logistics is ultimately about “delivering the right supplies to the right people, at the right place, at the right time, and in the right quantities” (Russell, 2005, pp. 37). It concerns a variety of stakeholders, including donors, government actors, militaries, humanitarian NGOs, and the final recipients of aid. Due to the complex nature of disasters, humanitarian logistics is difficult to carry out and at the same time uncompromisingly essential to saving human lives.

Thomas (2004, as cited in Russell, 2005) defines ten processes essential to humanitarian relief chains, as seen in Figure 2-2—(1) planning and preparedness, (2) assessment, (3) resource mobilization, (4) procurement, (5) transport, (6) tracking and tracing, (7) stock asset management, (8) extended point of delivery and relief to beneficiaries, (9) monitoring, evaluation and reporting, and (10) communications and collaboration. Additionally, he defines physical, informational, and financial flows of resources through this chain. Physical logistics concerns the railroads, vehicles, ocean liners, and aviation carriers required to transport aid from donors, through NGOs and suppliers, to beneficiaries. Informational flows include the knowledge that is acquired and shared between donors, local and international suppliers, NGOs, and recipients of aid. Finally, financial logistics involves the flow of cash, grants, and gifts-in-kind¹¹ from donors, NGOs, and suppliers to beneficiaries.

There has been a surge of interest in the field of humanitarian logistics, partic-

¹¹Gifts-in-kind (also known as in-kind gifts or in-kind donations) are a form of charitable giving where goods and services are directly provided, rather than money. For example, a pharmaceutical company may donate pain medication in-kind to a humanitarian organization, which may then repackaging this gift with the intent of distributing it to beneficiaries.

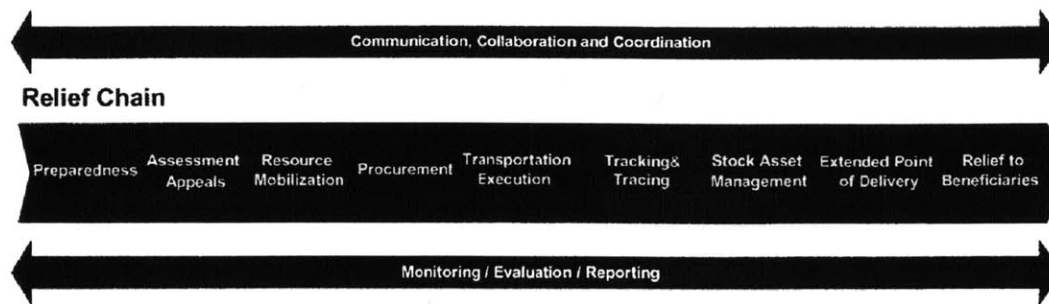


Figure 2-2: The humanitarian relief chain

ularly since the mid-2000s. Van Wassenhove (2006) comments on the importance of logistics and supply chain management to humanitarian relief organizations, outlining the need for humanitarian relief chains to be agile, adaptable, and aligned. Oloruntoba and Gray (2006) discuss the nature of the humanitarian supply chain, also commenting on the importance of agility, and in particular the need to capture large amounts of funding at short notice to provide emergency assistance. Kovács and Spens (2007) distinguish actors, phases, and logistical processes of humanitarian disaster relief, recommending that humanitarian logisticians can further draw on tools used by those in business. Furthermore, Holguín-Veras et al. (2012) argue that humanitarian logistics is too broad a term to fit into a single definition of operational conditions, with long-term assistance at one end of the spectrum and immediate post-disaster relief at the other.

Complicating factors

Though logistics operations in the humanitarian sector can draw on ideas from the business world, there are a number of features unique to humanitarian organizations and the environment in which they function that make logistics activities particularly complicated. These issues have been discussed at length by many others in previ-

ous literature (Davidson, 2006; Holguín-Veras et al., 2012; Kovács and Spens, 2009; Oloruntoba and Gray, 2006; Smillie and Minear, 2004; Stoddard, 2003; Van Wassenhove, 2006). Broadly speaking, they can be broken up into three main categories—organizational, operational, and environmental—as seen in Table 2.2.

Organizational complications include those factors internal to humanitarian organizations themselves, and in specific NGOs, that make logistics activity difficult. For example, humanitarian organizations experience a high rate of employee turnover in response to the emotional and physical demands of their work, which impacts the overall operational familiarity of the organization. Additionally, the vast majority of humanitarian relief organizations are non-profits and thus face external pressures to focus resources on maximizing value to recipients of humanitarian aid rather than on internal process improvements.

Operational factors refer to those external to the organization that directly impact logistics and supply chain functions. These include uncertainties in demand and supply, as well as dramatic time pressures due to the suddenness of emergencies. Furthermore, these include difficulties in acquiring data throughout operations, and coordinating activities across multiple organizations.

Finally, environmental factors are those that complicate the humanitarian system in general. For instance, humanitarian organizations are tasked to carry out their actions with neutrality and impartiality in mind,¹² yet they work alongside actors such as foreign governments, militaries, the media, and beneficiaries themselves which can make this difficult to accomplish. In addition, the majority of humanitarian

¹²Van Wassenhove (2006, pp. 479) discusses the difficulties in adhering to the humanitarian principles in complex environments, especially that of an armed conflict: “Any compromise on the humanitarian principles, such as using aid to secure the victory of one side over another, would nullify the intent of the operation and take out of the ethical context and mandate of the participating organization. Humanitarian work cannot judge the conflict; it can only judge the extent to which the conflict is affecting civilians.”

efforts take place in third-world countries and those in conflict, often posing unique physical, geographic, and security demands.

Table 2.2: Concerns for humanitarian logistics

Organizational	Operational	Environmental
Lack of resources and investment in infrastructure	Uncertainty in demand, supply, and needs assessment	Political and security concerns
High staff turnover	Inability to predict when disasters occur and of what type	Interactions with multiple stakeholders
Lack of depth of knowledge	Data acquisition	Need to follow humanitarian principles
Organizational culture	Time pressures	Physical and geographic demands

2.3 Measuring the performance of humanitarian activity

There are three ways to consider performance measurement in the humanitarian sector. The first concerns the macro performance of relief—that is, how well does aid help the people it intends to. This is mainly important for governments that donate large sums to relief and development activities in foreign countries, expecting that their contributions are put to good use. The second way of looking at this issue and the focus of this thesis is at the micro level, and concerns how humanitarian firms, and specifically non-profit NGOs, can evaluate their operational performance. The third way, which is not discussed at length in this thesis, is through monitoring and

evaluation (M&E). While a critical function of humanitarian organizations, M&E is differentiated from performance measurement as discussed here since it is a process regulated by donors onto NGOs and is highly specific to individual NGOs and their individual operations.

2.3.1 Why is it important?

Measuring performance is a key issue for humanitarian relief organizations and the non-profit community in general. As a recent article in *The Economist* (2011) admits, “far too many philanthropists and non-profits shy away from setting goals and measuring progress... [and as] a result they condemn themselves to ineffectiveness.” In this light, both goal-setting and performance evaluation should be regarded as a means for self-improvement.

Internally, performance measurement schemes can be used by humanitarian organizations to spot strengths and weaknesses in operational and financial environments. These are important to functional departments within these organizations as well as management. From the functional level, departments can use indicators of performance to spot trends in where they are improving or where they are falling behind in order to make adjustments in their operations—for example, the warehouse team may observe that their dock-to-stock (DTS) time¹³ has increased over the last few months, and knowing this, looks to reasons why this has occurred. On the other end of the spectrum, performance indicators can also be used by the front office to guide corporate strategy and business focus. For instance, a firm might notice that it performs best at receiving and redistributing gifts-in-kind, and subsequently

¹³Dock-to-stock (DTS) time will be discussed further in Chapter 3. It is defined as the time (usually in days) between when a shipment arrives at the dock of a warehouse to when it is stocked in the warehouse. Short DTS times are an indication that the warehouse team is performing well in processing incoming receipts.

chooses to market itself for these type of contributions as opposed to straight cash. Of course, trends in performance must be analyzed with respect to any unique and ulterior events that might underlie the data. If it was the mishandling of one large shipment that skewed that month's performance results, this should be considered before making serious changes in organizational policy.

Performance measurement is also important from an external standpoint. Legally, non-profits are required to maintain at least high-level data concerning financial transactions, such as revenue and expense streams, which are included in their IRS Form 990 and produced publically. Indicators of performance can also be used voluntarily to distribute to stakeholders and the public in general. For instance, Davidson (2006) argues that indicators can be presented to donors to increase the transparency of the non-profit and signify their willingness to be held accountable for their operational performance. Furthermore, performance indicators can be used as a means to convey strengths to others, and can thus serve as a marketing tool to help capture funding for future programs. For example, Heart to Heart International, a humanitarian NGO based in Kansas that will officially be introduced in Chapter 3, commits an extremely high percentage of contributions directly to relief and development programs, which it highlights on its website.¹⁴ This notification essentially serves as an indication of organizational quality, conveying a degree of trust to potential donors.

2.3.2 Why is it difficult?

Measuring the performance of humanitarian activity is challenging for a variety of reasons. First, the metrics that matter most tend to be the most difficult to acquire. This is largely due to the nature of non-profit activity, which usually involves the

¹⁴See www.hearttoheart.org/about-us/financials (accessed 21 January 2013).

provision of social goods that are fundamentally difficult to quantify. In discussing the importance of developing meaningful performance measurement systems for non-profits in general, Sawhill and Williamson (2001, pp. 371) highlight this point:

“Imagine an organization whose mission is to alleviate human suffering. How can you measure such an abstract notion? How can an organization meaningfully assess its direct contribution to such a broadly stated mission? And by whose criteria should success be measured?”

Second, those factors that make the humanitarian environment complicated in general terms also contribute to difficulties in measuring the performance of relief organizations. As observed by Davidson (2006, pp. 10), these include:

- Lack of centrally-captured data from operations
- Limited information technology infrastructure
- Lack of funding for IT infrastructure
- Variability / chaotic environment after each disaster
- External factors (e.g. geography, state response, etc.)
- Lack of incentive for measurement in non-profit sector
- Potential negative media exposure
- Human resources issues
- Organizational culture
- Long-term vs. short-term goals of disaster response

2.3.3 Performance measurement literature review

Despite these complicating factors, a number of approaches to measuring the performance of humanitarian action have been proposed in recent literature. This thesis looks to ideas from a few of these approaches, as well as others that concern general logistics performance to serve as a foundation for establishing a performance measurement system for Heart to Heart International in the following chapter.

Beamon and Balcik (2008)

In “Performance Measurement in Humanitarian Relief Chains,” Beamon and Balcik (2008) develop an approach that allows humanitarian NGOs to select various metrics to evaluate their supply chain performance.

Individual metrics for humanitarian logistics operations are first identified and categorized under three dimensions of performance—resource management, output, and flexibility. Their approach then suggests that an NGO choose at least one metric from each of these three dimensions and evaluate the system as a whole given the following four criteria:

- *Inclusiveness*—measurement of all pertinent aspects
- *Universality*—allow for comparison under various operating conditions
- *Measurability*—data required are measurable
- *Consistency*—measures are consistent with organizational goals

The authors argue that by establishing and making improvements in performance measurement systems, NGOs delivering humanitarian aid will be better positioned to make strategic decisions and address questions of accountability and transparency.

Caplice and Sheffi (1994)

In “A Review and Evaluation of Logistics Metrics,” Caplice and Sheffi (1994) provide an approach to evaluate performance indicators for organizations involved in logistics and supply chain operations in general. The authors aggregate characteristics of individual performance metrics identified as critical by previous researchers into a set of eight criteria—validity, robustness, usefulness, integration, economy, compatibility, level of detail, and behavioral soundness¹⁵—and categorize existing metrics into three primary forms of measurement:

- *Utilization*—input usage that is usually presented as a ratio or percentage of the actual amount of an input used to some norm value (i.e., $\frac{\text{Actual input}}{\text{Norm input}}$)
- *Productivity*—transformational efficiency that is typically reported as the ratio of actual outputs produced to actual inputs consumed (i.e., $\frac{\text{Actual output}}{\text{Actual input}}$)
- *Effectiveness*—quality of process output that is typically reported as a ratio of actual output to some predetermined norm or competitive standard (i.e., $\frac{\text{Actual output}}{\text{Norm output}}$)

Another purpose of this paper is to identify the inevitable trade-offs that arise when designing an individual metric. In particular, the authors highlight the fact that a single metric cannot satisfy all characteristics that make up an organization’s performance. The main trade-offs suggested are those between *integration* and *usefulness*, and *robustness* and *validity*.

¹⁵From Caplice and Sheffi (1994, pp. 14), *integration* implies that the metric includes all relevant aspects of the process and promotes coordination across functions and divisions. *Usefulness* implies the metric is readily understandable by the decision maker and provides a guide for action to be taken. *Robustness* implies the metric is interpreted similarly by the users, is comparable across time, location, and organizations, and is repeatable. Finally, *validity* implies that the metric accurately captures the events and activities being measured and controls for any exogenous factors.

Caplice and Sheffi (1995)

In “A Review and Evaluation of Logistics Performance Measurement Systems,” Caplice and Sheffi (1995) turn to an approach that can be used to evaluate an organization’s performance measurement system as a whole. The authors combine criteria obtained from supply chain management literature and company interviews to identify six characteristics that are most relevant to evaluating such systems:

- *Comprehensive*—the system captures all relevant constituencies and stakeholders
- *Causally oriented*—the system tracks those activities and indicators that influence future and current performance
- *Vertically integrated*—the system translates the overall firm strategy to all decision makers within the organization and is connected to the proper reward system
- *Horizontally integrated*—the system includes all pertinent activities, functions, and departments
- *Internally comparable*—the system recognizes and allows for trade-offs between the different dimensions of performance
- *Useful*—the system is readily understandable by the decision maker and provides a guide for action to be taken

Ultimately, the purpose of this paper is to provide management involved in logistics and supply chain decision making a means to evaluate their internal processes in order to spot weaknesses, make improvements, and guide strategy.

Davidson (2006)

In “Key Performance Indicators in Humanitarian Logistics,” Davidson (2006) reviews best practices of performance measurement exercised by logistics functions of military

and commercial organizations and suggests a key performance indicator (KPI) system to be used by the International Federation of Red Cross and Red Crescent Societies (IFRC). This approach is then applied to humanitarian operations conducted by the IFRC in response to two disasters—the Sahel Food Security Crisis of 2005 and the South Asia Earthquake of 2005.

After interviewing employees from several departments at their headquarters in Geneva, the author identifies that the over-arching goal of the IFRC in response to a disaster is a timely response rather than concerns of financial efficiency alone. Given this information, a system of four KPIs is proposed:

- *Appeal coverage*—expressed as (1) the percentage of the quantity of items that donors have pledged out of the total number requested, and (2) the percentage of items that have actually been delivered on-site out of the total number requested
- *Donation-to-donation time*—the median and mean amount of time it takes an item to be delivered after a donor has pledged to donate it
- *Financial efficiency*—expressed as (1) the under or over budget as a percentage of budget cost, (2) the difference between anticipated and actual budget in absolute terms, and (3) the ratio of total transportation costs to total product costs
- *Assessment accuracy*—measure of change in the operation’s final budget over time with respect to the original budget

Some other important features of Davidson’s proposed system include: (1) the designation of high-priority items to be delivered during an operation, (2) the use of specific breakpoints in time in expressing these metrics, and (3) the importance of how to weigh various types of items in calculating the operation’s overall performance. Furthermore, the author notes a number of other important themes in

humanitarian performance measurement, including the need at the outset of an operation to establish delivery and financial targets, as well as the need for complete and accurate data throughout.

Frazelle (2001)

In *World-Class Warehousing and Material Handling*, Frazelle (2001) identifies common benchmarks and indicators for general warehouse operations in terms of financial, productivity, quality, and cycle time performance. The author defines warehouse benchmarking as “the process of gathering and sharing those assessments and developing an improvement plan of action based on the assessment,” and cites three ways of looking at benchmarking (Frazelle, 2001, pp. 46):

- *Internal*—focus on the operations of a single company
- *External*—look outside the firm’s industry
- *Competitive*—look at firms conducting business in the same industry

Frazelle also introduces warehouse performance gap analysis (WPGA), which serves as a methodology for quickly indicating a company’s standing in performance versus world-class norms. WPGA allows the firm to produce a “performance profile,” as seen in Figure 2-3 and adapted from Frazelle (2001, pp. 57), that compares performance to pre-established standards.

Sawhill and Williamson (2001)

In “Mission Impossible? Measuring Success in Nonprofit Organizations,” Sawhill and Williamson (2001) discuss the importance of developing meaningful performance measurement systems for non-profit organizations in general. The authors cite The

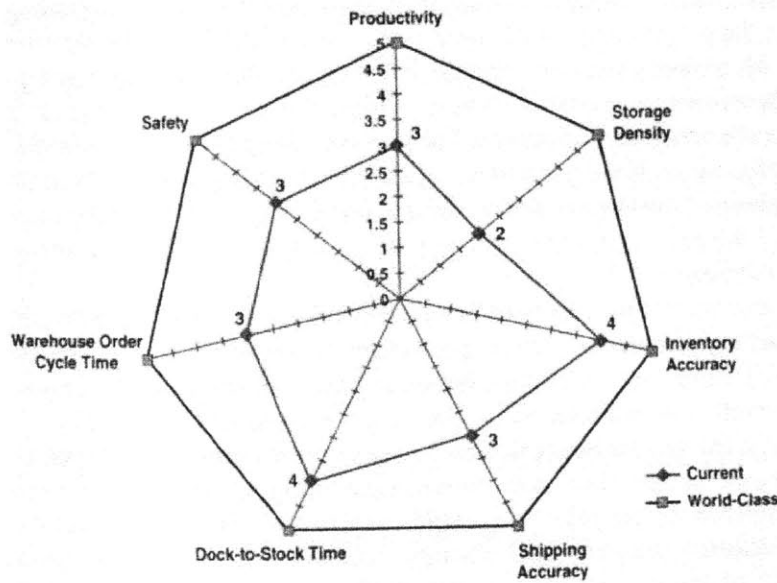


Figure 2-3: Warehouse performance gap analysis

Nature Conservancy, the world's largest charitable environmental organization, as a case study in which the implementation of a simple performance measurement system helped the organization better measure mission impact.

The Nature Conservancy initially measured progress by adding up the number of acres of land they had acquired and the total value of charitable donations they had received (i.e., *bucks* and *acres*). After questioning whether these metrics actually assessed concrete progress toward their mission of creating biodiversity, they developed a new measurement system consisting of 98 leading indicators that eventually collapsed under its own weight. The organization then designed a new measurement system that sought to create linkages between their mission, vision, goals, strategies, and programs, adopting a family of 9 measures in three main areas that proved successful, especially in motivating line managers:

- *Impact*—mission success
- *Activity*—achieving goals and implementing strategies
- *Capacity*—mobilization of resources necessary to fulfill the mission

Ultimately, the authors note that successful performance measurement systems of non-profits should: (1) be simple and easy to communicate, (2) be developed with marketing in mind, and (3) measure mission-oriented goals rather than attempting to measure mission itself.

USAID (2010)

“Selecting Performance Indicators” reviews the method by which USAID establishes metrics to define their performance. As the United States government’s international development arm, USAID’s metrics tend to illustrate high-level indications of the welfare of foreign countries compared to metrics of NGOs—for instance, USAID looks at private investment as a percentage of GDP, contraceptive prevalence rates, and child mortality rates. Their criteria for indicators include:

- *Direct*—the indicator clearly measures the intended result
- *Objective*—the indicator is unambiguous about (1) what is being measured and (2) what data are being collected
- *Useful for management*—the indicator provides a meaningful measure of change over time for management decision-making
- *Attributable*—the indicator can be plausibly associated with USAID interventions
- *Practical*—data for the indicator can be collected on a timely basis and at a reasonable cost
- *Adequate*—the indicator is sufficient to measure the stated result

- *Disaggregated, as necessary*—the indicator is modified if necessary to be applicable to relevant population subsets, such as gender, age, location, and other dimensions¹⁶

Additionally, USAID (2010) argues that performance indicators are important for keeping managers results-focused, providing objective evidence to stakeholders that results are being achieved, and communicating achievements to host country counterparts, other partners, and customers.

¹⁶USAID (2010) notes that disaggregation is particularly important as development programs often affect population cohorts or institutions in different ways.

Chapter 3

Case Study: Developing Logistics Key Performance Indicators for Heart to Heart International

“As resources become tighter, NGOs face new pressures for greater accountability for program impact and quality. Today, contributors, donor agencies, scholars, and relief and development practitioners are all asking: do NGOs practice what they preach? How do we know? How effective are their programs and projects?”

—Lindenberg and Bryant (2001, as cited in Beamon and Balcik, 2008)

The purpose of this chapter is to illustrate an approach by which humanitarian NGOs can develop key performance indicators (KPIs) to help judge the quality of their logistics and supply chain operations. First, the research methodology for this chapter is summarized, KPIs are defined, and the subject of this case study, Heart to Heart International (HHI), is introduced. A bottom-up analysis of HHI’s logistics and supply chain data is then performed in an attempt to identify what activities are particularly important to the organization’s operations. Next, a top-down analysis

of HHI's strategy, including their mission and objectives is performed, in order to identify what desired outcomes regarding their logistics activities are representative of their strategy. The proposed KPIs for HHI's logistics operations are then explained in detail and evaluated from an individual and systems perspective. Finally, the approach used to develop a KPI measurement system in this case is summarized.

3.1 Approach and research methodology

3.1.1 Case study design

The KPI system for HHI's logistics operations is designed using a dual-approach process. First, a bottom-up approach to indicators is considered, taking those activities that the organization carries out and merging them with what data is available or could be made available in the future. This allows for a general understanding of what operational information is important to the organization's logistics activities, as well as what can physically be measured. Second, a top-down approach to indicators considers the overall mission and objectives of the organization, in addition to those outcomes that are representative of the organization's strategy. In between the bottom-up and top-down approaches to indicators exist KPIs that are both relevant to the important activities carried out by the firm that can or could be measured, as well as the outcomes that are representative of the firm's mission and objectives. This dynamic is shown in Figure 3-1 below.

3.1.2 Overview of key performance indicators

KPIs serve as a core set of metrics used by the acting firm to measure the effectiveness and efficiency of the services that they provide. Though KPIs can be discussed in the

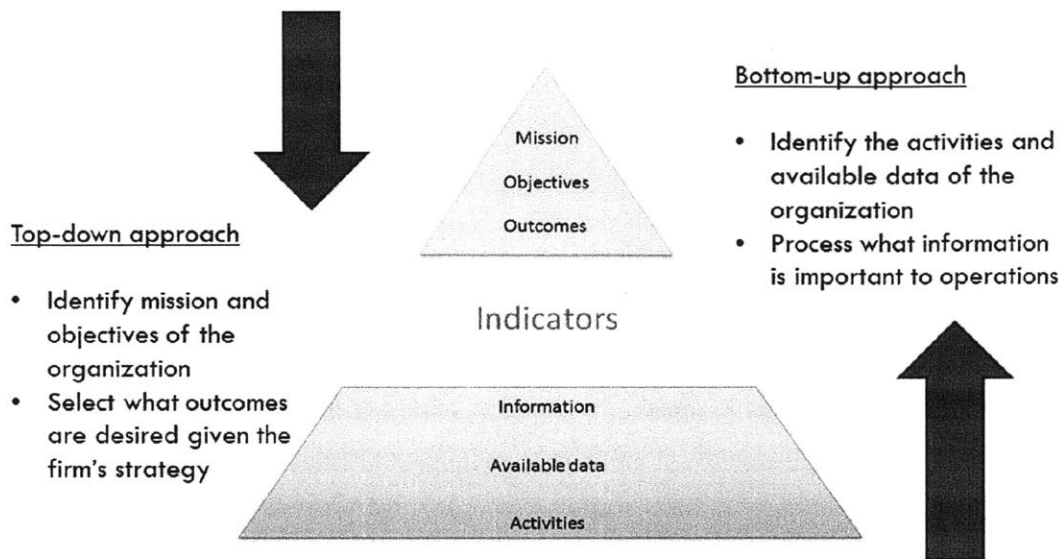


Figure 3-1: Bottom-up and top-down approaches to developing performance metrics

singular, they are usually monitored as a group. This is primarily due to the fact that meaningful interpretations of an organization's performance within a functional area, such as logistics, can only be made by observing multiple activities within that area. For instance, HHI's logistics operations are made up of inbound donation processing, inventory management, and outbound order processing, and there is no single metric that can sufficiently aggregate information across these activities. Thus, KPIs are best pursued and evaluated from a balanced and integrated systems perspective.

Why are KPIs useful?

KPIs provide decision makers within the organization a means to spot trends in how it carries out activities. They are generally either presented as a singular value or as a simple ratio, and thus can be monitored quantitatively. By observing trends in

KPIs, assessments of the performance of the organization in various functions and as a whole can be made. If designed correctly, KPIs are easy to calculate and can be quickly understood and communicated to others. Though quantitative by design, they can also be used in tandem with more qualitative data, such as monitoring and evaluation reporting.

KPIs also serve as a useful goal-setting and benchmarking tool. The foundation for such metrics exists in the corporate strategy of the firm, specifically in regards to what management believes is most important to core business. Thus, organizations can set KPIs in specific functional areas that management sees as critical to success. For instance, if the firm heavily relies on new business, then they may choose to monitor the number of unique incoming customers each month, in absolute terms and as a percentage of total customers. KPIs can furthermore be used the other way around. If an organization through its KPI system can identify areas of business where they excel, management may choose to modify strategy appropriately.

Finally, individual KPI metrics can be used as a marketing tool to help capture future business—in fact, Sawhill and Williamson (2001) recommend that performance measurement systems be developed with marketing in mind. As mentioned in the preceding chapter, HHI promotes the high percentage of donations made available for its relief programs—which essentially serves as a KPI—on their website to convey a sense of accountability to donors and other stakeholders.

What are their limitations?

While serving as useful indicators of performance, KPI systems are not a perfect tool and it is important to highlight some of their limitations. First and foremost, performance metrics themselves can only be used to spot trends in organizational

processes, which is not to be confused with quality itself. It is the role of those observing these trends to arrive at some determination of whether performance is improving, diminishing, staying the same, or indeterminant. Occasionally there are unique circumstances in the data that may skew results, and therefore this must be considered before making inferences of performance or changes in strategy.

Second, KPI schemes are not necessarily transferable from one organization to another and instead must be designed to fit the unique characteristics of the firm. According to Caplice and Sheffi (1995, pp. 62):

“Product characteristics, management focus, marketing channels, the competitive situation, and other factors create a unique logistical environment for each company which requires a customized performance measurement system.”

Thus, due to the unique circumstances that define each organization and its processes, KPI schemes must be developed internally and occasionally reevaluated with respect to modifications in functional and corporate strategy.

Third, performance measurement systems can incentivize adverse changes in behavior. For one, Meyer (2005) notes that performance indicators are subject to gaming, a situation in which the organization improves its ability to score high marks on its metrics without necessarily improving in quality.¹ Further, with respect to performance indicators in the health services sector, Davies and Lampel (1998) express concern that performance measurement may pervert organizational behavior

¹It should be noted that Meyer (2005) takes an unusually pessimistic perspective on the use of performance measurement systems. The author argues that the definition of “performance” and any inferences that can be drawn from it cannot be addressed by traditional methods because they focus on past accomplishments and actions and are frequently subject to gaming. In his own words: “Once a measure is identified as the driver of profitability or of any other desired long-term outcome and is rewarded, the measure will be gamed to the point whereby it ceases to contain information about the performance that is ultimately sought” (Meyer, 2005, pp. 289). Though his argument is a stretch, gaming the system should be a concern to those developing KPIs.

by promoting an adversarial and defensive culture—in their opinion, quality can only improve if employees trust that data and indicators are used in a way to enhance knowledge, rather than as a means to pass judgment.

Finally, KPI systems can be misinterpreted by those involved in decision making. As previously noted, indicators can only be used to spot trends, whereas performance itself must then be judged by human actors, who are of course fallible. Therefore, KPIs and KPI systems should not be regarded as a “silver-bullet” to improve organizational quality; instead, they must be accompanied by a real understanding of the organization’s strategy and commitment to improving processes.

3.2 Organizational history, strategy, and foundational information

3.2.1 History and general information

Who is Heart to Heart International?

HHI was founded in 1992 by Dr. Gary Morsch, a family physician from Olathe, Kansas (Morsch and Nelson, 1997). Dr. Morsch did not set out to build an international relief organization, but rather wanted to use his skills as a medical professional to help people in need. After traveling to the Chernobyl region of Russia to explore the potential for a project to help children affected by the nuclear disaster, he found the country’s health-care system in ruins and started a collection drive to provide medicine and medical supplies to Moscow. Major pharmaceutical companies soon donated to the cause, as well as the United States government who offered a C-5A Galaxy aircraft to transport the cargo. The resulting airlift—from the heart of the

United States to the heart of Russia—inspired Dr. Morsch to begin an organization whose purpose was to create healthier communities.

Today, HHI focuses on broadening access to healthcare services in the United States and abroad. In their words:

“Our mission is to improve global health through initiatives that connect people and resources to a world in need. Through our mobilization efforts, we provide medical education, deliver medical aid, respond to people in crisis and address community-health concerns around the globe.”²

Where do they operate?

HHI supports ongoing health initiatives in nearly 60 countries including the United States. According to their most recent annual report, HHI’s largest recipients of aid in 2010 in terms of total value were: (1) Haiti with US\$20.2m, (2) Guatemala with US\$10.1m, (3) El Salvador with US\$8.1m, (4) Mexico with US\$5.9m, and (5) the Dominican Republic with US\$4.9m (Heart to Heart International, 2010, pp. 4). In Haiti, by far their largest humanitarian response program today, HHI served an estimated 68 thousand patients and contributed over 45 thousand volunteer-hours to local projects in 2010 (Heart to Heart International, 2010, pp. 5).

How large are they?

HHI has consistently been one of the largest 25 international relief and development organizations operating in the United States since 1994.³ In their 2011 calendar year, HHI brought in nearly US\$89 million in total revenue according to IRS Form

²See <http://www.hearttoheart.org/mission> (accessed 23 January 2013).

³Public data from the National Center for Charitable Statistics (NCCS) provides evidence for this claim. The NCCS serves as the national repository of information for the nonprofit sector in the United States, deriving its data from IRS Form 990 filings.

990 filings, US\$88 million of which came directly from contributions and grants.⁴ That same year, HHI distributed US\$89 million in donations to programs through its relief networks, or partners. An important note regarding HHI operations and performance measurement is that the vast majority of these donations are gifts-in-kind (GIK), including medical pharmaceuticals and supplies from corporate donors, as opposed to cash.

Who are their primary donors?

HHI's donors include large companies, local businesses, foundations, civic organizations, schools, universities, faith communities, and individuals. The majority of their donations come from the private sector, including major pharmaceutical and medical supply companies who provide contributions in GIK form. For instance, their largest donors include Teva, Mylan, Sanofi, Welch-Allyn, Becton Dickinson, and Johnson and Johnson. They also receive a significant amount of charitable budget for shipping activities (freight, air, and ocean) from FedEx. HHI receives a marginal proportion of funding from the US government; per IRS Form 990 filings, HHI received \$145,000 in government grants in 2011, less than 0.2% of their total revenue for that year.

What products do they offer beneficiaries and how?

HHI offers products through their Custom Order Catalog which provides a complete list of all items the organization has in stock, their expiration dates, and the number of units, pounds, and cubic feet per case of product. The catalog is updated and emailed to approved partners every two weeks, and orders themselves arrive from partners through email. HHI also distributes Care Kits and Ready Relief Boxes,

⁴Other sources of revenue for non-profit organizations include program service revenue, investment income, and sale of inventory, amongst others.

which are pre-packaged kits of hygiene items, medicines, and medical supplies.

Heart To Heart International		Offer Quote # CATALOG-INTL		Heart To Heart Catalog		
Please write the name of your organization here:		Print Date: 13-Nov-2012				
Item	Brand Name Generic Name (Pack size/Type)	Expiration Date	Units/Case	Lbs/Case	Cubic Feet/Case	Requested Cases
WA-99848	CUFF TL DISP, VINYL, NEO4,1 TUBE, ML CUFF TL DISP, VINYL, NEO4,1 TUBE, ML (40/CASE)	N/A	1	1.4	0.1	
WA-99852	TRIMLINE DISPOSABLE BP CUFF - VINYL - CHILD - DBL TUBE - THREADED CONNECTOR 20/CASE TRIMLINE DISPOSABLE BP CUFF (20/CASE)	N/A	1	2.1	0.2	
WA-99854	CUFF TL DISP, VINYL, SMADULT 2, TUBE, SC CUFF TL DISP, VINYL, SMADULT 2, TUBE, SC (20/CASE)	N/A	1	3.0	0.2	
WA-99856	TRIMLINE DISPOSABLE BP CUFF - VINYL - ADULT - DBL TUBE - THREADED CONNECTOR 20/CASE TRIMLINE DISPOSABLE BP CUFF (20/CASE)	N/A	1	4.0	0.8	
WA-99869	CUFF TL DISP, VINYL, ADULT,1 TUBE, HP CUFF TL DISP, VINYL, ADULT,1 TUBE, HP (20/CASE)	N/A	1	3.6	0.5	
WA-99870	CUFF TL DISP, VINYL, ADULT LONG, 1 TUBE, HP CUFF TL DISP, VINYL, ADULT LONG, 1 TUBE, HP (20/CASE)	N/A	1	4.6	0.6	
WA-99871	CUFF TL DISP, VINYL, LG ADULT,1 TUBE, HP CUFF TL DISP, VINYL, LG ADULT,1 TUBE, HP (20/CASE)	N/A	1	5.2	0.9	
WA-99873	CUFF TL DISP, VINYL, ADULT,NEO3,2 TUBE, ML CUFF TL DISP, VINYL, ADULT,1 TUBE, HP (40/CASE)	N/A	1	1.8	0.2	
WA-99888	TRIMLINE DISPOSABLE BP CUFF - SOFT ADULT - DBL TUBE - BULB & VALVE & GUAGE TRIMLINE DISPOSABLE BP CUFF (20/CASE)	N/A	1	12.8	0.7	

Figure 3-2: Snapshot of HHI's Custom Order Catalog

3.2.2 Corporate strategy

How do they acquire donations?

HHI takes a multi-channel approach to fundraising, using corporate and individual donor relations, direct marketing, online giving, grant writing, special events, community events, tradeshow, speaking engagements and media relations as means to acquire donations. The overwhelming majority of products they receive are donated to them, whereas the actual purchasing of products makes up a negligible percentage of HHI's receipts.

What are their strategic objectives?

HHI identified four over-arching goals for their 2012 Strategic Plan concerning their identity and positioning, available resources, disaster response capabilities, and mobilization efforts. From these main objectives, HHI identified specific outcomes of interest that would demonstrate an improvement in performance given their overall strategy. The following desired outcomes are of particular note:

- Increase visibility and recognition
- Provide sufficient funds to cover program activities
- Provide effective and efficient response and use of resources
- Increase in volunteers, retention, and satisfaction
- Increase qualitative and quantitative feedback from recipient partners
- Increase number of recipient partners
- Increase donors, giving, and improved donor retention

What are their organizational strengths? Weaknesses?

Because the majority of their donations are GIK, HHI has been able to transfer an extremely high percentage of total revenue to programmatic expenses—historically, 95 to 98% of HHI's revenue goes directly to programs. This function of their business should be viewed as their main strength. Regarding their weaknesses, HHI faces difficulty in maintaining a steady, predictable flow of donations and forecasting future demand for their products. Of course, this is a difficulty that many humanitarian NGOs and non-profits in general face. Additionally, like most humanitarian NGOs, HHI has difficulty assessing the impact of their deliveries. This is driven by a low reporting response rate by partners delivering their products in the field.

3.2.3 Logistics and supply chain operations

What are the inputs, processes, and outputs of their supply chain?

Donors send contributions to HHI's Global Distribution Center (GDC) in Kansas City, Kansas, where they are stocked and entered into the organization's inventory.⁵ HHI then advertises its inventory with their biweekly Custom Order Catalog, which describes what products are available. Ordering organizations, called "partners," then place orders via email, which is entered into HHI's inventory system. After entering, HHI will follow up with the partner, usually with a phone call, to verify the order or explain that a requested item is no longer available. Once the order is verified, it is released to the warehouse for picking. The order is considered picked once all inventory for the order has been pulled off the shelf, packed into boxes, and scanned. Finally, the order is considered shipped to the recipient when it exits HHI's warehouse. Rarely does HHI deliver directly to beneficiaries, Haiti being a notable exception; instead, the vast majority of orders go to other organizations, such as churches or other humanitarian NGOs, who then deliver the product to beneficiaries. Additionally, HHI does not internally track the arrival date of orders to partners.

What logistics and supply chain data is collected by HHI?

HHI uses inventory management software to track inbound receipts and outbound orders, and to capture "inventory snapshots" that provide information on all line items available in their warehouse in Kansas. Though HHI also holds storage space in Haiti, their main inventory system does not track this data. Additionally, HHI

⁵HHI also maintains a storage depot facility in Haiti that does not monitor inventory through a formal system.

requests field reports from partners delivering its products to beneficiaries in the field to gain a better sense of the impact of their services; however, only 25% of partners return these reports and there is no way to assess their accuracy.

Table 3.1: Fields for HHI's inbound, outbound, and inventory database

Inbound receipts	Outbound orders	Inventory snapshot
Receipt number	Order number	Receipt number (when received)
Vendor / donor	Partner ID	Vendor / donor (when received)
SKU ID ^a	SKU ID	SKU ID
Brand / generic name	Brand / generic name	Brand / generic name
Category	Category	Category
Total weight / value	Total volume / weight / value	Total volume / weight / value
Receive / stock date	Enter / release / pick / ship date	Receive / expiration date
Expiration date	Ship method / carrier	Location in warehouse
Pallett number	Project code / final desination	Assembly number (if in kit)

^a SKU is short for "stock-keeping unit," a code used to identify each unique product or item available in inventory

What other firms are involved in their supply chain?

Besides its major donors and partners, FedEx provides logistics and supply chain services for HHI. FedEx also contributes monetary donations for HHI crisis response activities, as well as budget in shipping activities not restricted to crisis response.

Do they forecast demand? Is it steady-state? Cyclical? Predictable?

HHI finds it difficult, like many humanitarian organizations, to forecast demand and supply. Demand for HHI's products is primarily signaled through communication with partners and established through on-going relationships. Supply, on the other hand, is unpredictable due to the irregularity of donations. Neither demand nor supply is steady, seasonal, or cyclical.

3.2.4 Existing performance measurement schemes

How do they currently define performance?

When currently evaluating performance, HHI looks at a number of values from its inbound receipts, outbound orders, and inventory. From inbound data, HHI considers how many donors are supplying them product, the total number of receipts, SKUs, and line items they receive, dock-to-stock time, and total weight of inbound product. Outbound, they consider the number of recipients, orders, SKUs, and line items, the number of countries where their products will arrive, the total volume and weight of outbound product, and time between entry to release, release to pick, and pick to ship. HHI also monitors how full their warehouse is on a regular basis.

Who is made aware of their performance assessments?

There are two meetings where logistics performance is discussed within HHI. First, Leadership Team meetings occur at least monthly and incorporate the finance, resource development (i.e., fundraising), marketing and communications, and logistics departments, as well as the programs director, CEO, and other senior management. The Haiti executive director will also attend this meeting when available, and the

monitoring and evaluation department may be present. Second, Logistics Staff meetings occur once a month and include everyone from the logistics department. Outside of these meetings, performance assessments are reported monthly in the organization's operations report which is shared with all HHI staff and the Board of Directors.

3.3 Bottom-up analysis of logistics and supply chain operations

HHI provided complete inbound and outbound logistics data from 2010 through 2012 for this study. HHI also provided a number of inventory snapshots that would serve as reference points to establish their inventory level over time, as well as information on their warehouse including volume and rack locations. This formed the foundation for the following inbound receipt, outbound order, and inventory analysis.

Logistics operations for HHI essentially break down into three broad levels of activities—inbound donation processing, inventory management, and outbound order processing—as seen in Figure 3-3. First, donors (also known as vendors) will send donated products to HHI, who will visual inspect each receipt for defects, assign each item a unique license number, and rack them in inventory. These products are then kept in HHI's warehouse and advertised to the broader humanitarian community, who will place orders. Once an order is submitted, HHI will gather the items required for that order, palletize those items, and ship the order to the partner.

In performing the bottom-up analysis, the data fields identified in Table 3.1 are observed with respect to time and other factors in order to spot trends and non-trends in HHI's logistics and operational functions.⁶ Identifying trends is important for two

⁶Notably, non-trends can be just as important as trends, particularly when the organization would rather a non-trend be a trend.



Figure 3-3: Essential HHI logistics and supply chain operations

main reasons. First, they can serve as an indication of the organization's strengths and weaknesses, as well as whether its strategy is leading to measurable success. For instance, if the organization cites the acquisition and retention of donors as a goal, then it would be prudent to track the number of unique donors to the organization on a per month basis over the last few years. Additionally, the existence of both trends and non-trends can be relayed to leadership and others within the organization who can comment on their importance to the firm's strategy.

Notably, it can be problematic to draw conclusions regarding the statistical significance of trends through individual time series; thus, statistical significance of trends is not discussed in this section. Rather, trends in variables are merely *categorized* into one of seven domains by observing the ratio of (1) the slope of the linear least squares regression line through each variable over one years time, to (2) the average value of the variable over all available data.^{7,8} This ratio provides a quick and dirty means to assess the degree to which the data is linearly trending, either positively or negatively. For example, if a ratio of 0.10 is observed for a particular variable, then one can say that, over a years time, the linear least squares regression line through

⁷The average value of the variable is used as a means to normalize the data so that comparisons can be made across different types of variables.

⁸It is also important to note here that in no way does this analysis imply that any of the time series observed in this section vary distinctly *linearly* with respect to time. Instead, a linear trend is used—as opposed to exponential, logarithmic, etc.—to model the severity of how much the variable's average has increased over time.

the data will have *approximately* increased 10% of that variable's average. The trend classification scheme is presented in Table 3.2.

Table 3.2: Categorization of trends

Trend	$\frac{\text{Slope}}{\text{Mean}}$	Notation
<i>Strongly increasing</i>	≥ 0.10	+ + +
<i>Moderately increasing</i>	$[0.050, 0.099]$	+ +
<i>Marginally increasing</i>	$[0.025, 0.049]$	+
<i>No trend</i>	$[-0.0249, 0.0249]$	=
<i>Marginally decreasing</i>	$[-0.049, -0.025]$	-
<i>Moderately decreasing</i>	$[-0.099, -0.050]$	--
<i>Strongly decreasing</i>	≤ -0.10	---

Minimum, maximum, mean, median, standard deviation, and upper and lower quartiles are also identified for each observed value. Due to space constraints, not all variables and trends are discussed at length in this section. It is also important to note that occasionally data points are excluded from trend calculations if they are believed to overly-skew results. Therefore, when data is excluded it is identified as such in the notes of the appropriate summary table. Finally, certain values and donor names are hidden to address anonymity concerns where appropriate.

3.3.1 Inbound donation processing

Weight and value

A *strongly increasing* trend is identified for total weight in pounds of inbound product per month, whereas total value of inbound product received each month by HHI is experiencing a *marginally increasing* trend. Increasing trends for weight and value are desired, as this indicates the organization is receiving more donations.

Line items, SKUs, and receipts

A line item refers to a single detailed record of a particular item, whereas a receipt refers to a single received shipment, consisting of at least one, and perhaps thousands, of line items. For example, if a warehouse receives three bottles of 200 milligram tablets of Ibuprofen with 1,000 tablets per bottle, ten stethoscopes, and a package of five 0.5 milliliter syringes in a shipment, this single receipt will carry three separate line items. Additionally, a stock-keeping unit (SKU) refers to a unique code used to identify each product or item within a receipt, order, or in inventory. Therefore, the receipt from the previous hypothetical will also have three unique SKUs. In addition, every bottle of 200 milligram Ibuprofen tablets with 1,000 tablets per bottle, regardless of whether it has arrived in a receipt, is on order, or is in inventory, will (hopefully) share the same SKU code. A *moderately increasing* trend is observed for HHI's inbound line items with respect to time, while *no trends* are observed for either SKUs or receipts. This indicates that the firm's management complexity and overhead is relatively under control.

Dock-to-stock time

Dock-to-stock (DTS) time refers to the time it takes in days to stock an item onto the warehouse shelf. The average DTS time of all line items is observed to be *strongly decreasing*. However, this result is skewed by a spike in DTS times during the middle of 2011, as seen in Fig 3-4; throughout 2012, DTS times for HHI have remained relatively flat. A decreasing trend in DTS times indicates an improvement in warehouse performance, although stable DTS times may be positive if they are at a place where the organization is content.

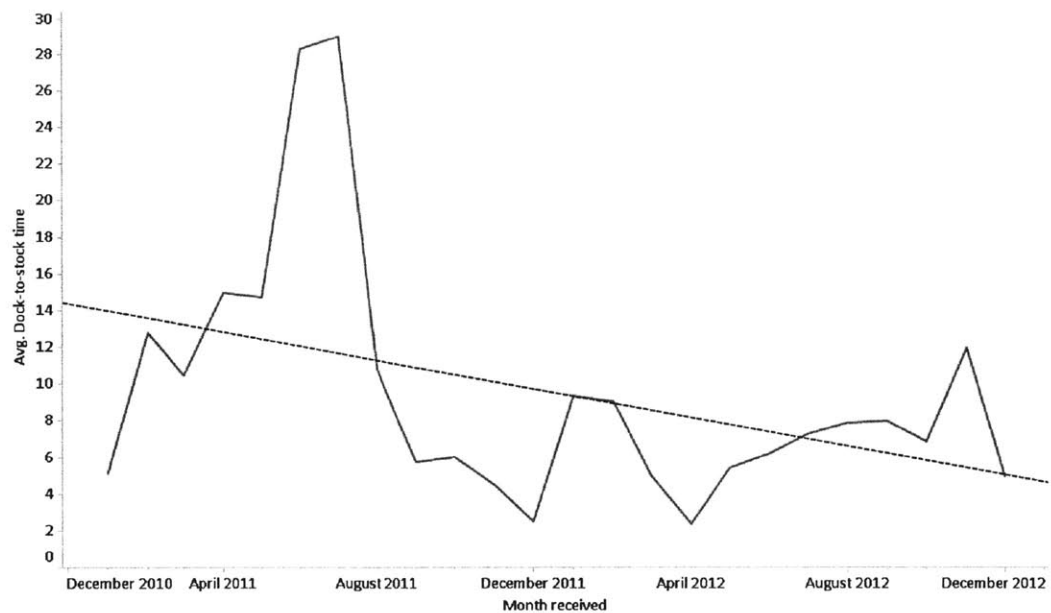


Figure 3-4: Average DTS time of line items, per month, 2011—2012

Additionally, HHI was interested in whether the number of line items in, the total weight of, or the total value of a receipt had an impact on its DTS time. In Figure 3-5 we observe each unique receipt, its count of line items, its total weight in pounds, and its value in dollars. Only *no trend to marginally increasing* trends are

observed here, suggesting that neither the count of line items, weight, or value has a significant impact on the DTS time of the receipt.

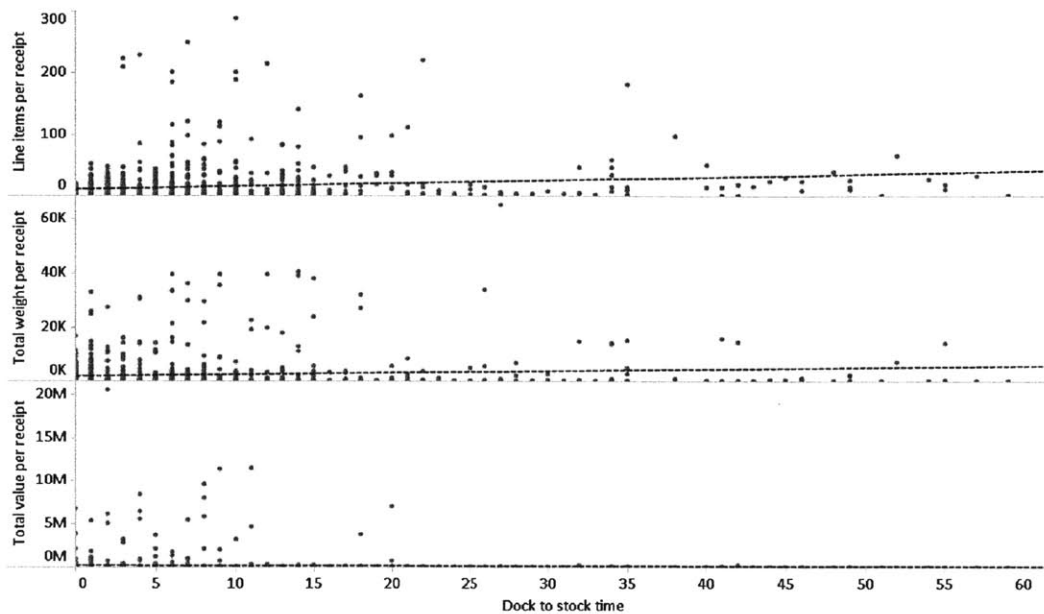


Figure 3-5: Impact of line items, weight, and value on DTS time, 2011—2012

Donors

The count of unique donors of product to HHI is also observed on a per month basis; however, *no trend* is observed. This suggests that the number of donors to HHI is not growing nor shrinking from year to year. This is not necessarily a positive or negative indicator of performance—rather, that is an opinion of the organization’s leadership.

Analysis of line items, weight, value, and DTS time, per individual receipt

A number of calculations were also made on a per receipt basis to gain a sense for how HHI's receipt composition has changed with respect to time. The average count of line items per receipt was found to have a *strongly decreasing* trend; that is, the number of line items per receipt is likely decreasing over time. The average value of receipt was found to have a *strongly increasing* trend, suggesting that receipts are becoming more valuable in monetary terms over time. In general, receipts with greater value and less items (i.e., less complexity) should be viewed as a positive trend. Finally, in Figure 3-6, the average DTS time for receipts per month was found to have a *strongly decreasing* trend, while the average weight of receipts per month is classified as having a *moderately increasing* trend.

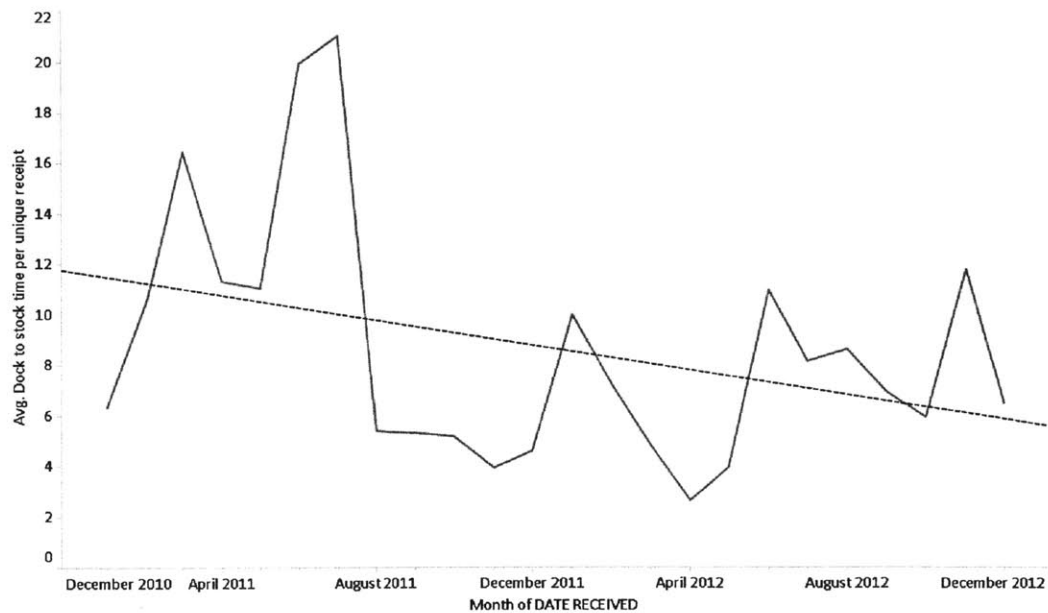


Figure 3-6: Average DTS time per receipt, per month, 2010—2012

Table 3.3: Inbound receipt analysis, 2010—2012

Field	Min	Max	Mean	Median	StDev	Upper Quartile	Lower Quartile	<u>Slope</u> <u>Mean</u>	Trend
Line items ^a	196	1,326	554.4	533	251.6	709.0	365.5	7.4%	+ +
SKUs ^a	127	548	336.8	341	117.6	441.0	232.0	-0.6%	=
Receipts ^a	22	60	37.3	34	11.2	47.5	28.0	2.3%	=
Total weight [k- pounds] ^{a,b}	21.9	168.2	68.0	59.3	34.2	84.8	40.4	17.1%	+ + +
Total value [US\$k] ^{a,c}	330.4	20,963.8	5,718.2	3,402.3	5,597.3	7,970.3	1,769.7	4.9%	+
Avg. DTS [days] ^d	2.4	29.0	9.5	7.6	6.8	11.6	5.2	-48.9%	- - -
Donors ^a	10	24	14.2	14	3.2	15.5	12.0	0.9%	=

^a Jan through Mar 2010 excluded due to abnormalities in inbound receipts in response to Haitian earthquake

^b Nov 2012 excluded due to abnormally heavy shipments of hygiene supplies from Johnson and Johnson

^c Aug and Nov 2012 excluded due to abnormally valuable shipments of pharmaceuticals from Mylan and Teva

^d Jan through Dec 2010 excluded due to lack of data; 3 negative and 1 abnormal receipts excluded

^e Jan 2010, Feb 2011, and Apr 2011 excluded due to abnormalities in receipt values of pharmaceuticals from Mylan and Teva

Table 3.4: Per receipt calculations of inbound receipt analysis, 2010—2012

Field	Min	Max	Mean	Median	StDev	Upper Quartile	Lower Quartile	<u>Slope</u> <u>Mean</u>	Trend
Avg. line items per receipt	7.5	25.0	15.2	15.0	5.1	20.0	10.8	-11.0%	- - -
Avg. weight per receipt [pounds]	768.7	9,144.8	2,311.4	1,905.0	1,611.7	2,804.5	1,266.6	9.7%	+ +
Avg. value per receipt [US\$k] ^a	12.2	580.9	154.7	100.1	156.3	196.9	53.4	39.3%	+ + +
Avg. DTS time per receipt [days]	2.6	21.1	8.7	7.1	4.9	11.0	5.2	-33.7%	- - -

^a Jan 2010, Feb 2011, and Apr 2011 excluded due to abnormalities in receipt values of pharmaceuticals from Mylan and Teva

3.3.2 Inventory management

HHI's inbound receipts are processed by the organization's warehouse team at their Global Distribution Center (GDC) in Kansas City, Kansas. Line items within each receipt are stocked in the GDC, labeled with a numeric license plate code, and entered into the inventory database. Once an item is entered in the database, it is advertised on HHI's Custom Order Catalog as being available for order. When an item is picked and shipped for an outbound order it is removed from the database.

The inventory management system used by HHI does not automatically capture and record the amount of inventory available in the GDC. However, semi-regular inventory "snapshots" were taken during the middle months of 2012 that provide information on what line items and their unit count are in the organization's inventory at specific points in time. Therefore, to determine HHI's inventory as a function of time, the total number of available units observed in a single inventory snapshot serves as a baseline, and the predicted units of inventory for previous and future months are calculated by considering the count of inbound and outbound units in other months. For example, to forecast available units for the month following the baseline, the number of inbound units that arrived during the baseline month are added to the baseline, while the number of outbound units that departed are subtracted.⁹

⁹Notably, there is some observed error when the predicted count of units is compared to the actual count of units observed in a snapshot. According to Dan Neal, the Director of Global Logistics at HHI, this is partly due to assembly procedures. When HHI Care Kits and Ready Relief Boxes are assembled, these items are treated as a single unit even though they were comprised of multiple separate units. This will result in fewer predicted units than what is actually available for months beyond the baseline, and more predicted units for months prior to the baseline. For instance, using June 2012 as a baseline, there is an 8.2% observed difference between predicted and actual counts of inventory in January 2013. While this error is not significant to the point that the results of this inventory analysis should be ignored, it is still important to consider..

Units in inventory

The number of units in a line item refers to the specific count of items that exist within that line item. In our previous example of a shipment of three bottles of 200 milligram tablets of Ibuprofen, ten stethoscopes, and a package of five syringes, this shipment contains 18 units in total. The unit count of inventory is useful in that it allows for comparisons with respect to inbound receipts and outbound orders.

Figure 3-7 shows the count of available units located in HHI's GDC warehouse as a function of time between January 2010 and January 2013. Clearly, there is a significant spike in inventory in February 2011, which corresponds to an unusually large receipt of over 14 million medical swabs.¹⁰ Excluding this receipt and the subsequent months where this inventory lingered, HHI on average holds between 1 and 4 million total units in inventory.

It is also interesting to observe HHI's inventory over the last year of available data, as seen in Figure 3-8. Here, we observe a *strongly increasing* trend in the number of units available in inventory. It is difficult to say definitively what this means for the organization without simultaneously observing inbound receipts and outbound orders over this same time period. For instance, an increase in inventory could correspond to a decrease in units ordered; however, it could also correspond to a strong influx of received donations.

Inbound and outbound units

As mentioned above, it is also important to consider inbound and outbound units with respect to inventory levels. Figure 3-9 below shows the count of inbound and

¹⁰This points to one main limitation of observing inventory as a function of unit counts. A medical swab received by HHI consists of a relatively insignificant amount of value compared to pharmaceuticals or medical devices, yet each item is of equal standing when observing unit counts.

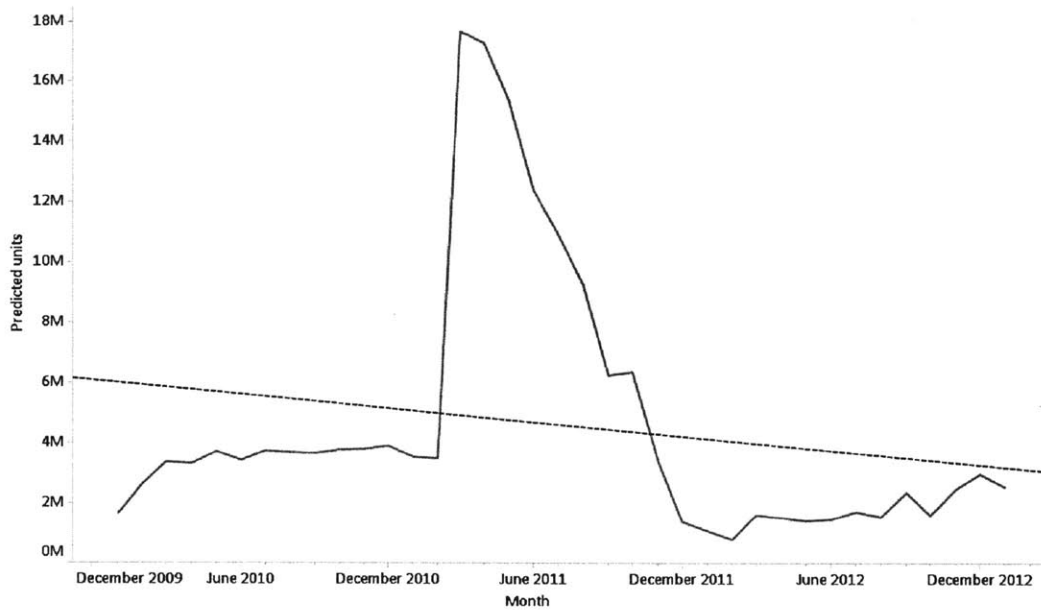


Figure 3-7: Units available in inventory, January 2010—January 2013

outbound units per month since January 2012 through January 2013. Again, a spike appears in inbound units corresponding to the large receipt of medical swabs. Interestingly, in the six or so months following this receipt, HHI was able to scale up its delivery of units, which is why its inventory dropped to normal levels by 2012.

Figure 3-10 shows the count of inbound and outbound units each month between January 2012 and January 2013. Here we see *strongly increasing* trends for both inbound units and outbound units. However, the count of inbound units is generally higher than outbound, which explains why HHI's inventory grew rapidly in 2012.

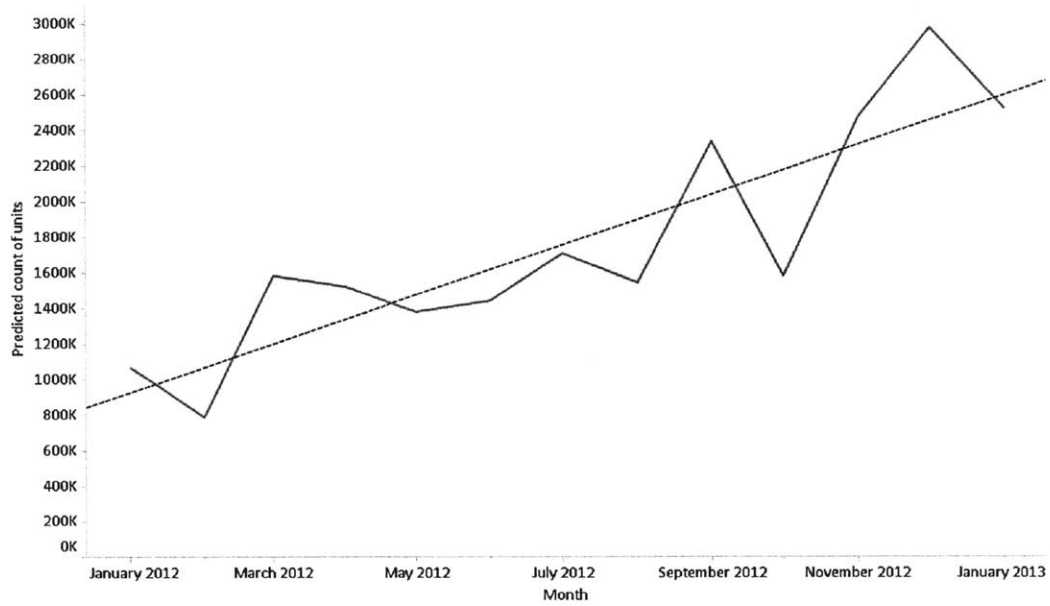


Figure 3-8: Units available in inventory, January 2012—January 2013

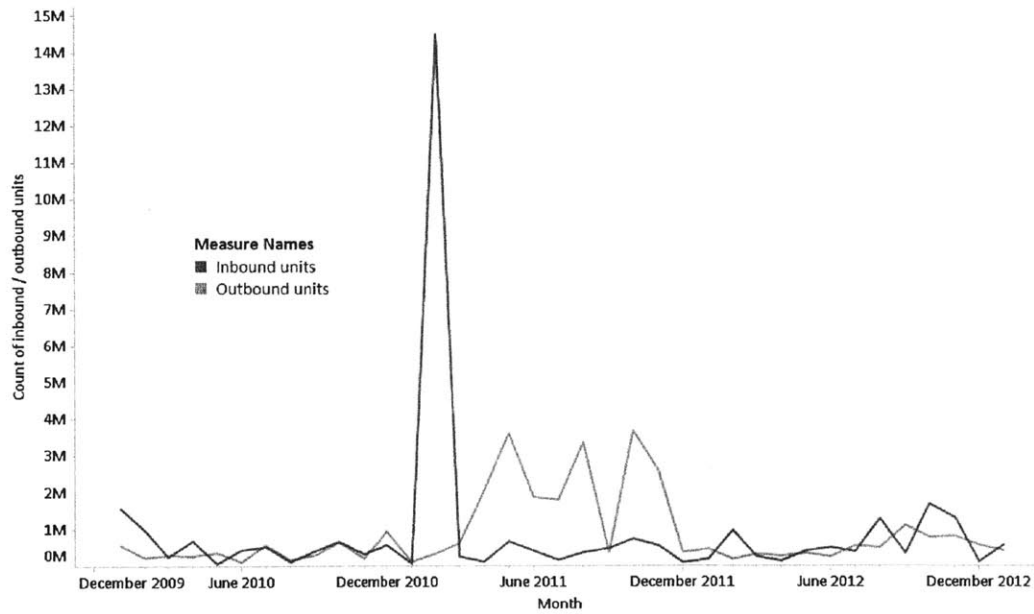


Figure 3-9: Inbound and outbound units, January 2010—January 2013

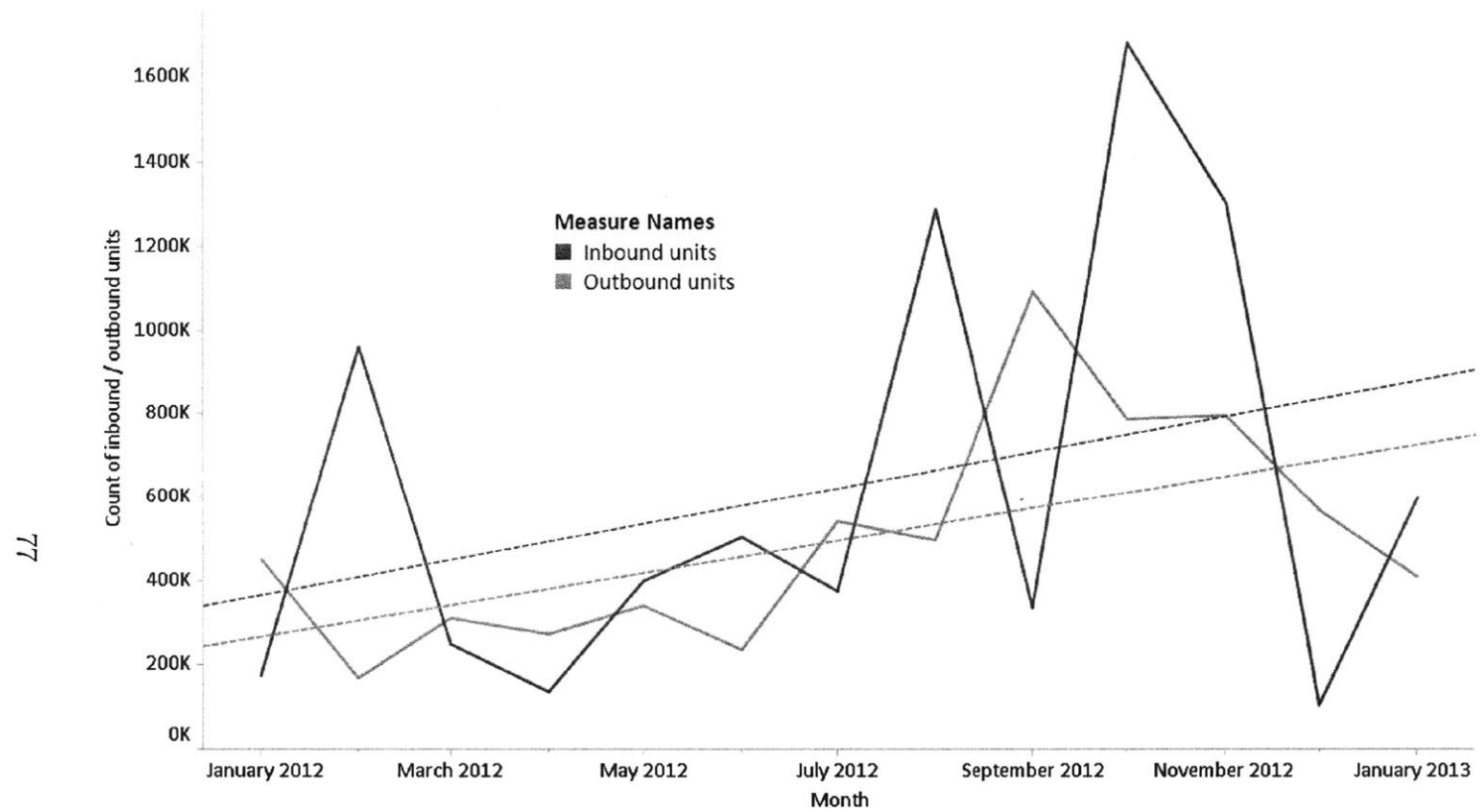


Figure 3-10: Inbound and outbound units, January 2012—January 2013

Inventory turns and days of inventory

Inventory turns is a measure of the number of times inventory is sold or used within a certain time period, usually given as a year. For instance, an inventory turn of 12 means that the organization sold or used its inventory 12 times per year (once a month), whereas an inventory of turn of 1 means that the organization sold or used its inventory only once over that year. A low turnover rate may indicate overstocking which unnecessarily drives up inventory holding costs for the organization, while a high turnover rate may indicate that the organization suffers from stock shortages.

There are a number of ways to calculate inventory turns; for example, it is occasionally defined as the ratio between the cost of goods sold and average inventory on hand. In this case, inventory turns are calculated as the ratio between the number of units sold and the average number of units in inventory over the last year.

$$\text{Inventory turns} = \frac{\text{Number of units sold over a year}}{\text{Average number of units in inventory}}$$

From Figure 3-11, a *strongly increasing* trend is observed for HHI inventory turns, though over the last quarter of 2012 this may be leveling off between three and five turns per year. While it is important to note that the appropriate number of turns is dependent on the sector and the organization in question, for-profit companies typically aim for an inventory turn ratio between six and 12. For a humanitarian organization like HHI which relies on “pushing” its available inventory to partners, a ratio between three and six is perfectly reasonable.

Additionally, the number of days in inventory is observed for HHI. This is simply given as the number of days per year over the inventory turn ratio, and corresponds to the average number of days the organization holds its inventory before using

it. Since inventory turns and days in inventory are inversely proportional, it is no surprise that days in inventory is experiencing a *strongly decreasing* trend. Towards the later quarter of 2012, HHI is ordering off its inventory every 100 days.

$$\text{Days in inventory} = \frac{365 \text{ days}}{\text{Inventory turns}}$$

Warehouse capacity

Data was also provided on the warehouse capacity used per month between August 2011 and December 2012. Warehouse usage is calculated as the percentage of warehouse racks occupied by at least one unit of inventory. The trend in warehouse capacity utilized is *marginally decreasing*, and is roughly 70% on average.

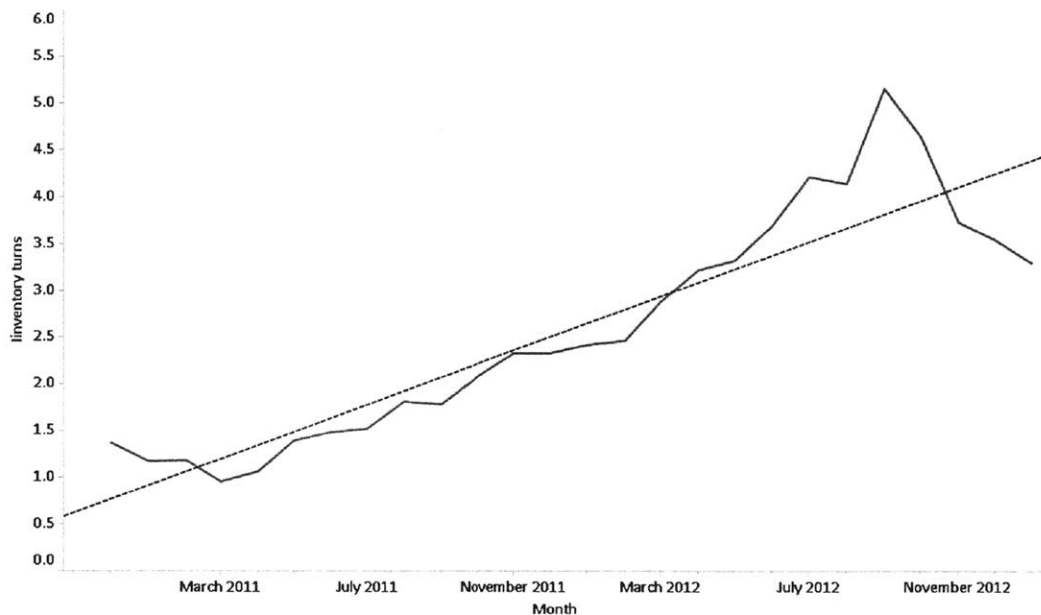


Figure 3-11: Inventory turns, December 2010—January 2013

Table 3.5: Inventory analysis, 2010—2012

Field	Min	Max	Mean	Median	StDev	Upper Quartile	Lower Quartile	<u>Slope</u> <u>Mean</u>	Trend
Units in inventory [thousands] ^a	789.1	2,980.8	1,765.8	1,582.7	628.4	2,407.1	1,415.9	94.9%	+ + +
Inbound units [thousands] ^a	103.0	1,676.9	622.3	398.7	515.7	1,124.2	208.9	82.4%	+ + +
Outbound units [thousands] ^a	166.8	1,091.8	496.1	451.9	263.3	674.5	290.5	92.6%	+ + +
Inventory turns ^b	0.95	5.16	2.58	2.38	1.21	3.58	1.46	67.5%	+ + +
Days in inventory [days] ^b	70.8	382.7	178.6	153.7	90.2	250.8	101.9	-72.4%	- - -
Warehouse capac- ity used ^c	57.0%	78.0%	68.9%	68.0%	6.6%	76.5%	64.5%	-4.1%	-

^a Data analysis includes only January 2012 through January 2013

^b Data analysis includes only December 2010 through January 2013

^c Data analysis includes only August 2011 through December 2012

3.3.3 Outbound order processing

Volume, weight, and value

The total volume of HHI's outbound product, per month, is observed as having *no trend*, while the total weight of product is experiencing a *marginally decreasing* trend. Total value of outbound product per month is found to be *moderately increasing*.

Line items, SKUs, and orders

The count of line items leaving HHI on a per month basis is found to have a *moderately increasing* trend, whereas the count of unique orders per month is observed as having a *marginally decreasing* trend. The count of outbound SKUs per month, however, is experiencing a *strongly increasing* trend—that is, HHI is likely distributing an increasing number of unique items per month.

Entry, release, pick, and ship dates

The count of days between when an order is entered, released, picked, and shipped is considered. Ideally, the time between each event will decrease over time, as this indicates that the warehouse staff is doing a better job processing orders. The average count of days from entry to release, and from pick to ship are found to have *strongly decreasing* trends; however, the average count of days from release to pick is experiencing a *moderately increasing* trend. Overall, the average count of days between order entry and shipment is found to have a *moderately decreasing* trend.

Figure 3-12 illustrates the proportion of time taken up by each specific warehouse process. On average, entry to release and pick to ship processes each take up 45% of the total entry to ship time, whereas release to pick takes up approximately 10%.

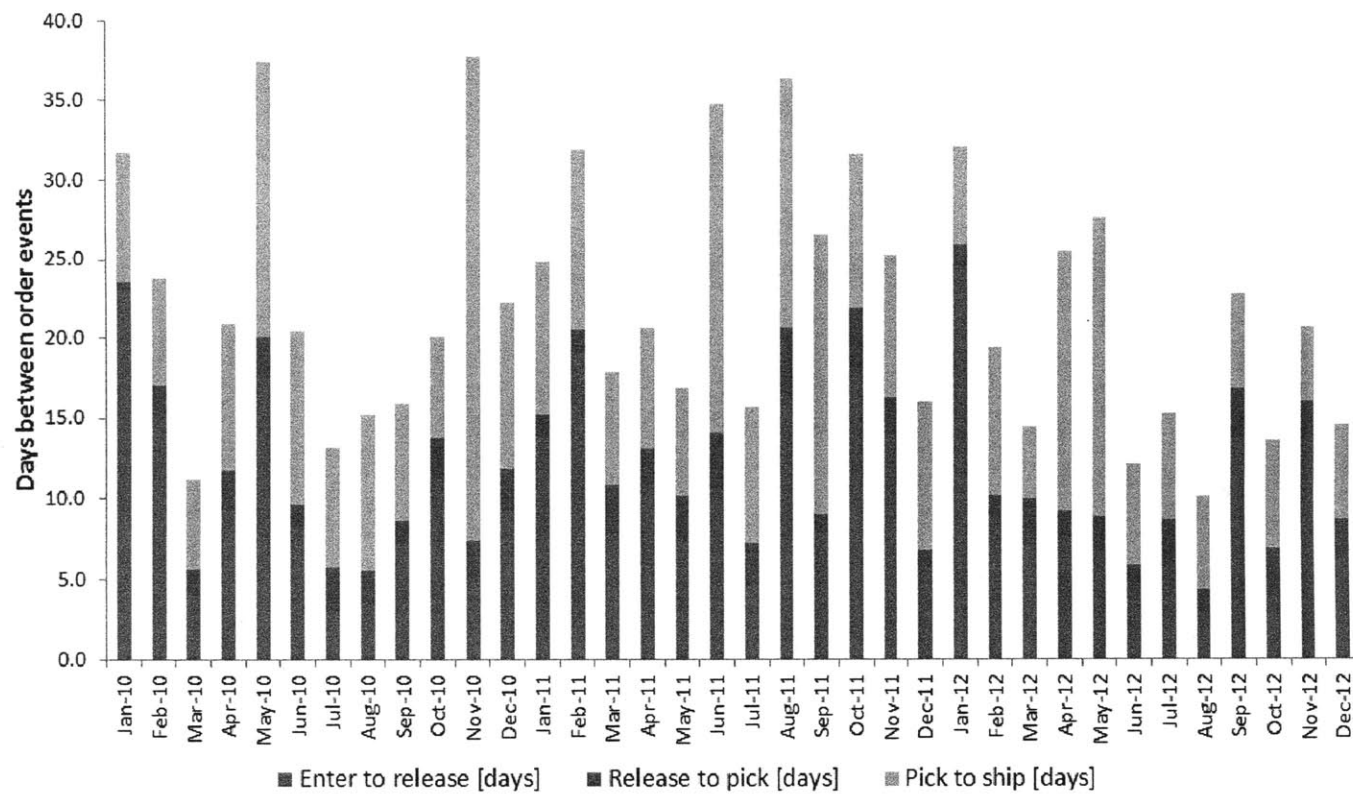


Figure 3-12: Avg. days between warehouse events, per month, 2010—2012

Partners

A partner refers to whoever places an order for product through HHI. The count of unique partners placing orders with HHI, per month, is found to have *no trend*.

Projects

A project refers to a specific program into which HHI categorizes orders—for instance, “HAITI-EARTHQUAKE,” “JOPLIN-TORNADO,” and “CUSTOM ORDER.” The count of specific projects identified by HHI, per month, is experiencing *no trend*.

Destination countries

The destination country of an order refers to the final location where that order will be delivered. The count of unique destination countries that HHI is providing orders for is found to have a *moderately increasing* trend, suggesting that HHI is sending product to more countries.

Additionally, Figures 3-13 and 3-14 illustrate the total weight of product shipped and the average time it takes to process a line item from entry to ship for each destination country between 2010 and 2012.¹¹ It is important to note here that the times referred to in this section *do not* include the time it takes the order to transit to its final location. For instance, orders to Japan were entered and subsequently shipped within a single day, on average; however, they most certainly did not arrive in Japan on that same day.

¹¹Since processing times outlined here are calculated as averages, those with a small number of records may be skewed. For example, while 437 unique orders to Haiti were processed between 2010 and 2012, there were only three orders to Yemen that were processed, one of which took 288 days.

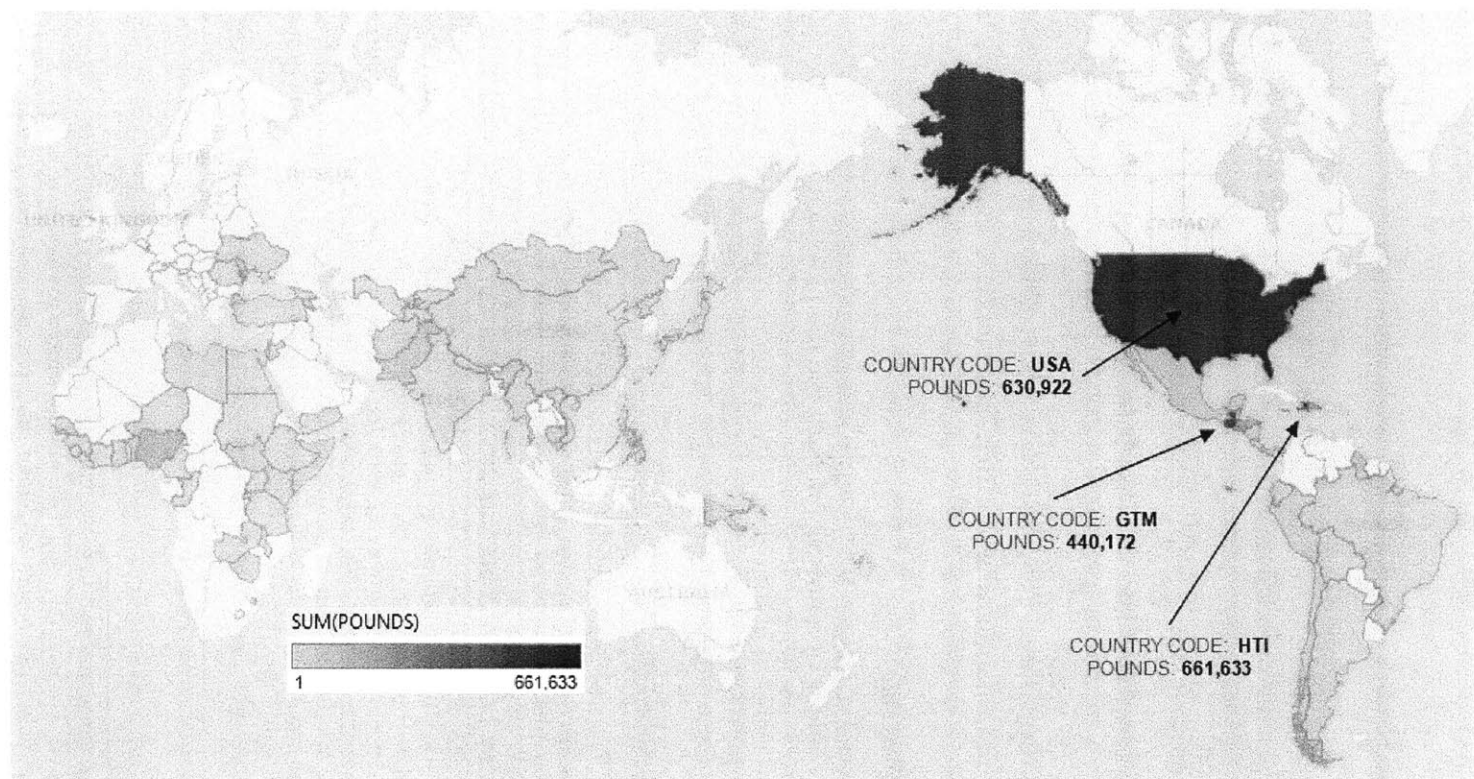


Figure 3-13: Total shipment weight to select countries, 2010—2012

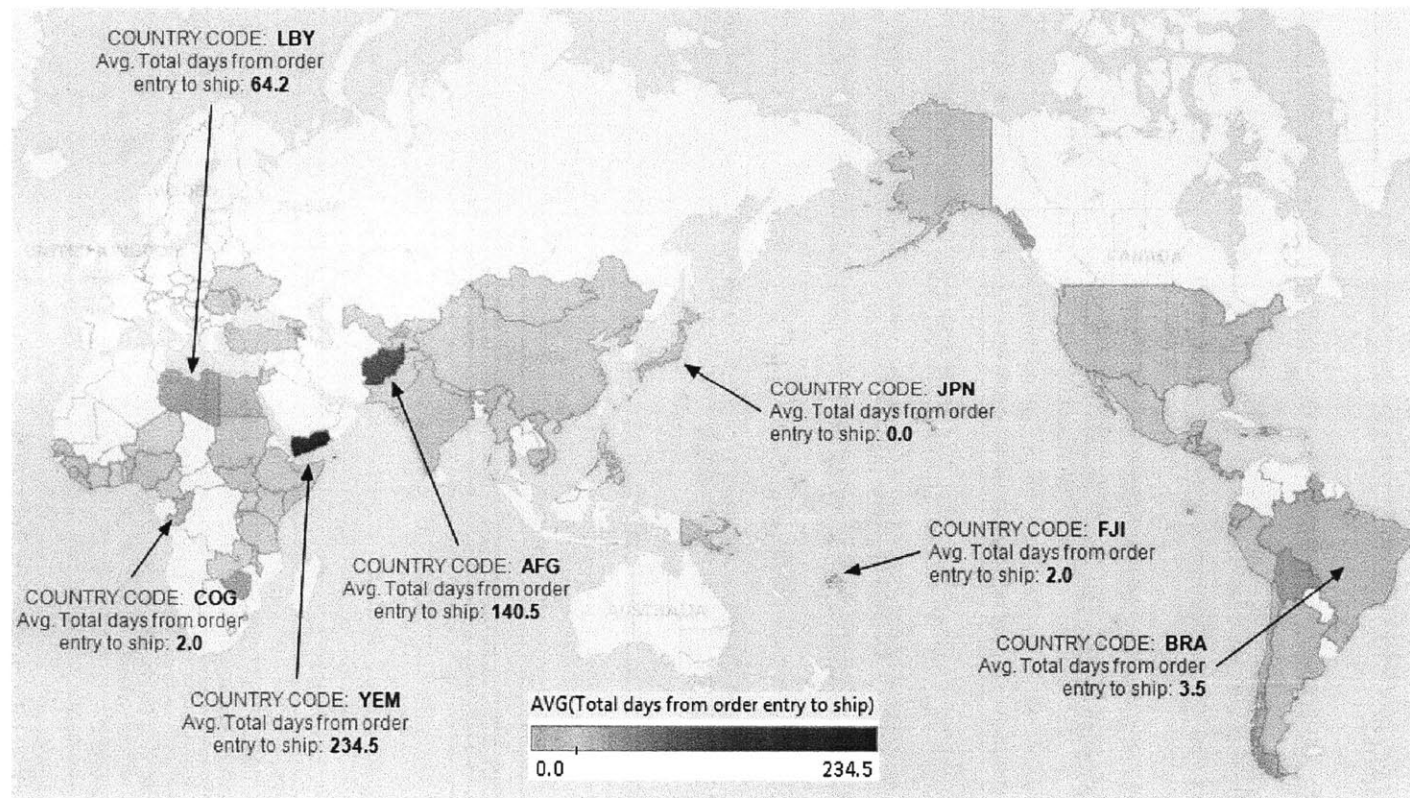


Figure 3-14: Average entry to ship time of select countries, 2010—2012

Obsolete inventory

HHI was also interested in the inventory it was disposing of due to obsolescence or expiration. Similar to the analysis performed in the inventory management section, the number of obsolete inventory turns is observed on a per month basis.

$$\text{Obsolete inventory turns} = \frac{\text{Number of obsolete units disposed of over a year}}{\text{Average number of units in inventory}}$$

There were a large proportion of null records in this dataset—in fact, HHI only disposed of product in 7 out of 36 months of available data. From Figure 3-15 below, HHI's obsolete inventory turnover rate is experiencing a *strongly increasing* trend; however, it dropped dramatically in December of 2012. Additionally, this rate has routinely existed below 5% of total inventory, which is a decent target for a firm that pushes pharmaceutical and medical devices, many of which have a shelf-life.

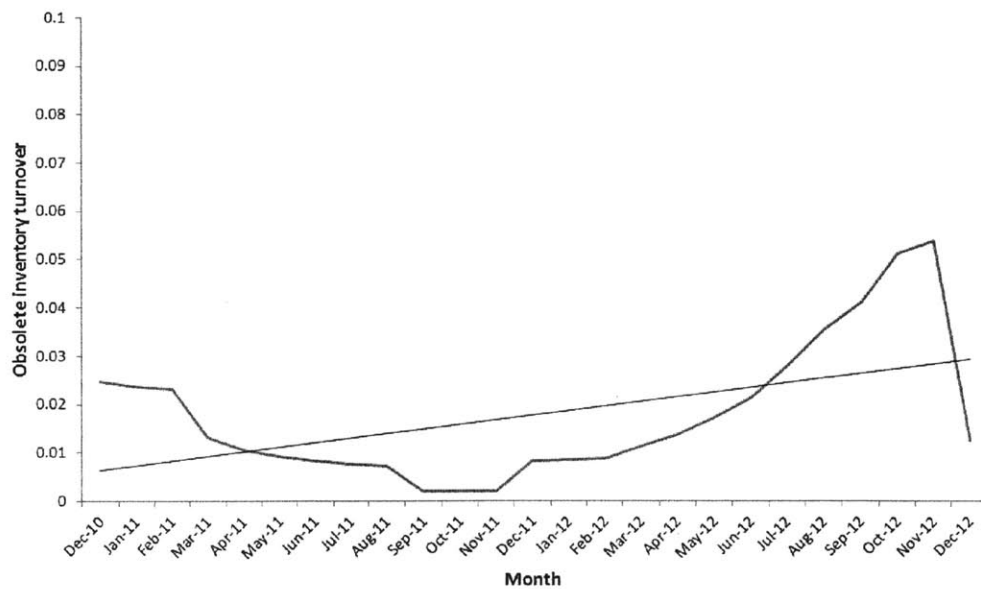


Figure 3-15: Obsolete inventory, by volume and weight, per month, 2010—2012

Analysis of line items, volume, weight, and value, per individual order

To gain an understanding of the changes in HHI's order composition, the count of line items, volume, weight, and value of product is observed per individual order. The average count of line items and value per order, per month, are found to have *strongly increasing* trends—that is, the number of line items within an order and the value of orders themselves are increasing over time. The first of these two trends can be seen in Figure 3-16, which indicates that HHI's outbound order composition is getting more complex over time. The average volume and weight of individual orders are both found to be experiencing *moderately increasing* trends.

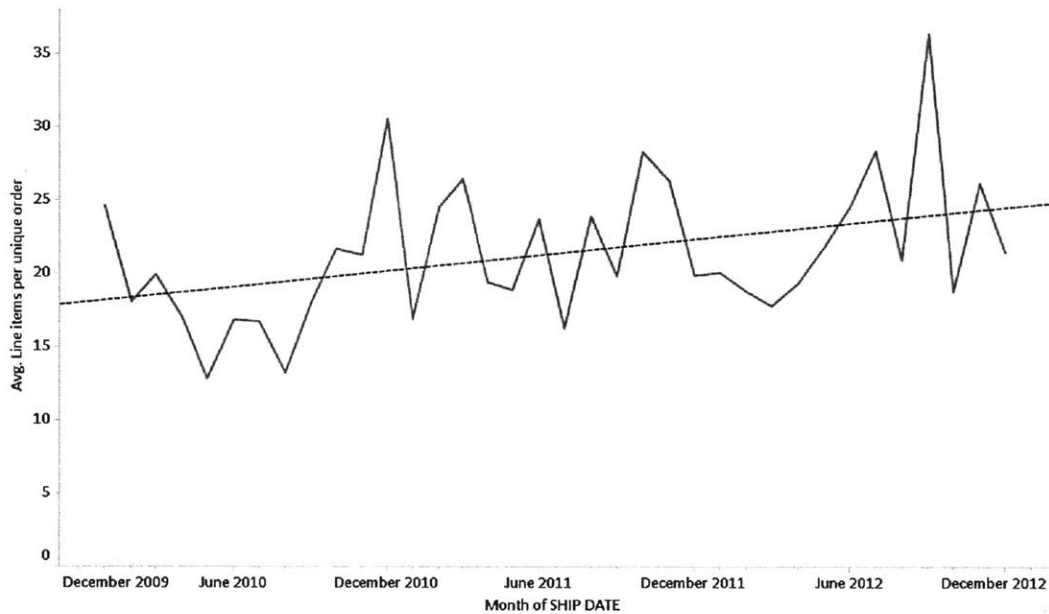


Figure 3-16: Average outbound line items per order, per month, 2010—2012

Table 3.6: Outbound order analysis, 2010—2012

Field	Min	Max	Mean	Median	StDev	Upper Quartile	Lower Quartile	<u>Slope</u> <u>Mean</u>	Trend
Line items	658	2,275	1,535	1,543	432.5	1,866.8	1,241.8	5.4%	+ +
SKUs	156	746	495.4	482	132.3	609.3	413.3	13.8%	+ + +
Orders	39	110	72.6	72	18.0	88.0	57.5	-2.6%	-
Volume [k-cubic feet]	1.2	15.4	7.7	7.3	3.0	9.4	5.8	-1.4%	=
Weight [k-pounds]	15.7	156.6	81.5	73.9	32.7	107.8	53.9	-4.7%	-
Value [US\$k]	426.5	21,157.7	7,242.7	5,537.6	5,410.0	9,289.8	3,684.8	9.2%	+ +
Partners	24	67	41.0	40	10.7	46.5	33.3	0.6%	=
Projects ^a	5	9	6.6	6	1.1	7.8	6.0	-2.4%	=
Destination countries ^b	8	24	15.5	15	3.7	18.0	12.3	8.9%	+ +

^a Excludes any projects that concern obsolete product

^b Excludes countries designated “DESTRUCTION” for removal of obsolete product

Table 3.7: Outbound order events analysis, 2010—2012

Field	Min	Max	Mean	Median	StDev	Upper Quartile	Lower Quartile	<u>Slope</u> <u>Mean</u>	Trend
Avg. entry to release time [days] ^a	2.9	24.5	10.0	8.1	5.6	13.8	5.8	-11.2%	---
Avg. release to pick time [days] ^{a,b}	0.6	4.1	2.2	2.3	0.8	2.6	1.4	6.8%	++
Avg. pick to ship time [days] ^{a,c}	4.4	30.4	9.9	8.2	5.5	10.7	6.4	-10.0%	---
Avg. entry to ship time [days] ^a	10.0	38.6	22.2	20.6	8.0	27.3	15.4	-9.0	--

^a “DESTRUCTION” country code excluded

^b One abnormal order from July 2011 to Nigeria of medical supplies excluded

^c One abnormal order from November 2010 to Haiti of pharmaceuticals and medical supplies excluded

Table 3.8: Other calculations for outbound order analysis, 2010—2012

Field	Min	Max	Mean	Median	StDev	Upper Quartile	Lower Quartile	<u>Slope</u> <u>Mean</u>	Trend
Obsolete inventory turns [% total units] ^a	0.002	0.054	0.018	0.013	0.014	0.024	0.008	64.7%	+ + +
Avg. line items per order ^b	12.8	36.4	21.4	20.0	4.9	24.5	17.8	10.1%	+ + +
Avg. volume per order [cubic feet] ^p	31.2	354.5	115.9	109.8	58.9	147.6	72.7	8.6%	+ +
Avg. weight per order [pounds] ^b	338.6	3,579.0	1,233.0	1,151.5	616.2	1399.9	878.6	7.9%	+ +
Avg. value per order [US\$ ^k] ^b	10.9	244.5	98.2	78.1	66.8	135.1	49.4	13.1%	+ + +

^a Data analysis includes only December 2010 through December 2012

^b A single order by the US Department of State from September 2012 to Moldova of pharmaceuticals is excluded due to its abnormal volume, weight, and value

3.3.4 Insights from bottom-up approach

Individual KPIs identified using the bottom-up approach are produced in Table 3.9, and were selected after discussing observations from the bottom-up approach with HHI logistics staff. This approach stressed the importance of standard warehousing metrics as a means to benchmark logistics activity. These include, for instance, dock-to-stock (DTS) time, warehouse order cycle time (WOCT), and warehouse usage. Further, given that HHI deals with pharmaceuticals and medical devices that often have a shelf life, tracking the turnover of obsolete inventory is also important.

It was also observed from this approach that HHI relies on a small number of large donors to supply the majority of their inbound product. Thus, it would be useful for the organization to track the percentage of total inbound value that is received from this small handful of donors. A high concentration of donations from a small number of organizations is not necessarily a negative outcome, though it may point to issues of reliance and lead to product shortages or stock-outs.

3.4 Top-down analysis of organizational strategy

The top-down approach to developing KPIs considers the objectives of the organization and what desired outcomes are representative of that strategy being fulfilled. Of course, this is a largely subjective process, and one that is dependent on the beliefs of individuals within the organization itself. Thus, a survey was distributed to full-time staffers and board members of HHI to help provide an understanding for the thoughts of these individuals in regards to the organization's goals. Additionally, some insights were drawn from direct conversations with HHI personnel.

Table 3.9: Logistics KPIs identified by bottom-up approach

KPI	Logistics activity	Equation	Data collected?
Dock-to-stock (DTS) time	Donation processing	Avg. DTS time per receipt	Yes
Donor concentration ratio (DCR)	Donation processing	$\frac{\text{Value from largest donors}}{\text{Total inbound value}}$	Yes
Inventory turns (IT)	Inventory management	$\frac{\text{Count of outbound units}}{\text{Avg. units of inventory}}$	No
Warehouse usage ratio (WUR)	Inventory management	$\frac{\text{Occupied warehouse area}}{\text{Total warehouse area}}$	Yes
Obsolete inventory turns (OIT)	Inventory management	$\frac{\text{Obsolete outbound units}}{\text{Avg. units of inventory}}$	No
Warehouse order cycle time (WOCT) ^a	Order processing	Avg. time between events per order	Yes

^a Warehouse order cycle time should also be split up into three event-to-event cycle times—order entry to release, release to pick, and pick to ship

3.4.1 The survey

The survey used in this approach consists of four parts. The first section asked standard background questions, such as title, department, and engagement with the logistics department. Next, the respondents were asked of their perceptions regarding the importance and overall strategy of HHI's logistics department. Third, respondents were asked what objectives were critical to HHI logistics operations, and how the organization was fairing in meeting those objectives. Finally, respondents were asked what outcomes they would like the logistics department to monitor. The contents of this survey can be viewed in Appendix B.

3.4.2 Results

Background

Of the 36 HHI staff and board members polled, 24 survey results were received. Responses came from all departments within the organization, including logistics, finance, resource development (i.e., fundraising), programs, administration, amongst others. Approximately 70% of respondents had worked or been affiliated with HHI for a period of five years or less. About 80% of respondents indicated that they interact at least weekly with HHI's logistics department.

Logistics perceptions

When asked how important product and GIK distribution is to the success of HHI, 78.3% of respondents described it as a "very important activity" while the remaining 21.7% described it as "the most important activity." When asked how much HHI should charge partners for GIK distribution, 73.9% of the organization indicated that HHI should generate "modest" surplus revenue from this activity to invest in other activities, 21.7% indicated that HHI should generate "significant" surplus revenue, and the remaining respondent indicated that HHI should cover half its logistics costs.

Respondents were also asked to state, in their own words, what the main objective of HHI's logistics department should be. Many responses here highlighted the importance of product and GIK distribution to partners. For example:

"To distribute medical supplies to agencies who need the product and use it effectively."

"Distribute the most product that they can in a manner that is satisfactory and convenient to customers."

"To secure and distribute products to partners and to generate revenue for use elsewhere."

“Fulfill the Heart to Heart core mission of providing product to our partners and projects.”

Logistics objectives

Respondents were then asked how critical certain objectives from a list of twelve are to HHI on a scale of 1 (not important) to 5 (very important). Table 3.10 summarizes those three objectives that ranked highest and those three that ranked lowest.

Table 3.10: Highest and lowest ranking logistics objectives

Rank	Objective	Score	Rank	Objective	Score
1	Quality and accuracy of orders to partners	4.57	9	Leveraging volunteers for services	3.75
2	Accountability and transparency to donors / partners	4.43	10	Availability of wide array of products to partners ^b	3.43
3	Quality of available products	4.13 ^a	11	Delivery of aid direct to beneficiaries	2.87

^a Good communication between logistics staff and other departments also ranked in at 3, with a score of 4.13

^b “Community involvement” ranked in between 10 and 11 with a score of 3.41, however respondents were confused as to what this exactly meant and thus this result was ignored

Performance measurement

In the fourth section of the survey, respondents were asked what metrics—from a list of fifteen that the organization is currently capable of measuring—they would like to see included in the HHI monthly report. Table 3.11 summarizes the five objectives that ranked highest, and the five that ranked lowest.

Table 3.11: Highest and lowest ranking performance metrics

Rank	Objective	Response rate	Rank	Objective	Response rate
1	Total value of product received from donors	81.8%	11	Warehouse order cycle time (WOCT) ^{b,c}	31.8%
2	Total value of product delivered to partners	77.3%	12	Quantity of disposed product due to expiration	27.3%
3	Quantity of product delivered to partners	68.2%	13	Dock-to-stock (DTS) time	22.7%
4	Quantity of product received from donors	63.6%	14	Accuracy of items stocked in warehouse	22.7%
5	Number of unique partners serviced ^a	54.5%	15	Number of unique programs / projects	13.6%

^a The number of unique destination countries also ranked in at 5, with a 54.5% response rate

^b WOCT is the time between when an order is placed and when it is shipped

^c The accuracy of orders delivered to partners / beneficiaries also ranked in at 11, with a 31.8% response rate

Finally, respondents were asked what additional measures of logistics activity they would like to see included in the monthly report, even if it cannot currently be calculated by HHI. Some interesting responses included:

“Number of Volunteer Hours specifically for Logistics activities.”

“Number of work days supplied by volunteers.”

“True demand for categories of products and even better, true demand for specific products.”

3.4.3 Insights from top-down approach

Individual KPIs identified using the top-down approach are produced in Table 3.12. This approach indicated that connecting GIK from donors to partners is the primary mission of the organization. Notably, respondents asked for this to be reflected through the value of GIK over quantity, and thus the value of inbound and outbound product will be essential for HHI to track. Further, both the quality of available products and orders placed to partners ranked high on logistics objectives. It is therefore important that HHI monitor how accurately orders are being processed by the logistics staff, in addition to the state of product available in the warehouse.

Two responses from the final question yielded interesting results as well. First, two respondents indicated that the efforts of volunteers should be included in the monthly report. This likely speaks to the aspect of HHI that promotes the involvement of the community in helping serve their mission. Second, one respondent was interested in tracking the “true demand” of products. When orders are placed by partners, HHI is occasionally unable to supply the total amount demanded to that partner due to a lack of product. Therefore, it would be a useful practice to observe how much product demand is actually being satisfied by the organization.

There were also a few interesting items that were less important given the top-down approach. For one, the direct delivery of aid to beneficiaries ranked last on logistics objectives, stressing HHI’s focus on connecting *partners* to product, rather than beneficiaries directly.¹² In addition, some measures that were observed to be critical in the bottom-up approach seemed less important to respondents, such as DTS time, warehouse order cycle time (WOCT), and obsolete inventory turnover.

¹²A notable exception to this rule is HHI operations in Haiti.

Table 3.12: Logistics KPIs identified by top-down approach

KPI	Logistics activity	Equation	Data collected?
Inbound value (IV)	Donation processing	Total inbound value	Yes
Damaged product ratio (DPR)	Donation processing	$\frac{\text{Damaged inbound receipts}}{\text{Total inbound receipts}}$	No
Volunteer hours (VH)	Inventory management	Volunteer hours per month	Yes
Outbound value (OV)	Order processing	Total outbound value	Yes
Total demand satisfied (TDS)	Order processing	$\frac{\text{Value of product satisfied}}{\text{Value of product demanded}}$	No
Perfect order ratio (POR)	Order processing	$\frac{\text{Orders processed without error}}{\text{Total order count}}$	No

3.5 Proposed logistics KPI system

This section identifies the individual KPIs that were selected for HHI's preliminary logistics KPI system, evaluates these metrics and the system as a whole with respect to the criteria defined by Caplice and Sheffi (1994, 1995), and suggests a means to monitor and present the system.

3.5.1 Individual KPIs

The individual KPIs identified for HHI's logistics performance measurement system using the bottom-up and top-down approaches are defined here, including the way in which each metric can be calculated, its usefulness as an indicator, and how it

should be interpreted by the organization. Further, these KPIs are evaluated on an individual basis given the criteria identified by Caplice and Sheffi (1994).¹³ Of note is that some of the metrics suggested here cannot currently be monitored by HHI because they do not capture the required data; however, where this is true this thesis suggests how the data for these metrics can be collected by the organization in the future. The KPIs themselves are summarized in Tables 3.13 and 3.14.

Donation processing metrics

Dock-to-stock (DTS) time Dock-to-stock (DTS) time refers to the time it takes, usually measured in days, to stock all line items in a receipt onto the warehouse shelf. A decreasing trend in DTS times will indicate an improvement in the performance of warehouse staff, although level DTS times may also be ideal if they are at a point with which the organization is content.

Since DTS time is a standard warehousing metric used amongst nearly all organizations where receipt of product is important to operations, it is both a *robust* and *useful* metric. However, because DTS is likely dependent on the total volume of inbound receipts and outbound orders, and only concerns inbound ordering processes, it is neither *valid* nor *integrative*.

¹³Caplice and Sheffi (1994) cite eight criteria to evaluate performance metrics on an individual basis. *Validity* indicates that the metric accurately captures the events and activities being measured and controls for any exogenous factors. *Robustness* indicates that the metric is interpreted similarly by the users, is comparable across time, location, and organizations, and is repeatable. *Usefulness* indicates that the metric is readily understandable by the decision maker and provides a guide for action to be taken. *Integration* indicates the metric includes all relevant aspects of the process and promotes coordination across functions and divisions. *Economy* indicates that the benefits of using the metric outweigh the costs of data collection, analysis, and reporting. *Compatability* indicates the metric is compatible with the existing information, material, and cash flows and systems in the organization. *Level of detail* indicates the metric provides a sufficient degree of granularity or aggregation for the user. Finally, *behavioral soundness* indicates the metric minimizes incentives for counter-productive acts or game-playing and is presented in a useful form.

Over the last year, HHI was processing receipts at an average of approximately seven days, or one week. It is recommended that the organization continue to process receipts with this speed or better in the future. However, since HHI warehouse staff is a limited resource, during times where there are a large number of outbound orders it is reasonable to expect DTS times to suffer.

DTS = Avg. count of days between dock-to-stock, per receipt

Donor concentration ratio (DCR) Through the bottom-up analysis approach it was observed that the value of product supplied to HHI is concentrated among a small number of large donors. The donor concentration ratio (DCR) captures as to what degree the organization relies on donations from these organizations.

DCR is *valid* in that it accurately captures the proportion of business supplied by HHI’s largest donors, *useful* in that it signals to decision makers risks of reliance and potential stock-outs, and *behaviorally sound* in that it cannot be doctored by the organization. It is however, not *robust* nor *integrative* since it should not be compared across organizations and only considers donation acquisition processes.

It is recommended that HHI track two forms of the DCR—the first being defined as the value supplied by the largest four donors over total value donated on a monthly basis, whereas the second considers the value supplied by the largest eight donors. Thus, DCR is similar to firm-four and firm-eight concentration metrics that are often used to characterize markets.

$$DCR = \frac{\text{Value received from largest donors}|_{4,8}}{\text{Total value received from all donors}}$$

Inbound value (IV) The inbound value (IV) is simply the total value of GIK supplied to HHI from donors in a given month. Though it is a performance indicator, it is not provided as a ratio. IV is considered extremely important to the organization since respondents to the top-down analysis survey placed heavy emphasis on this quantity. HHI currently broadcasts this metric within the organization, and it is recommended they continue to do so since product acquisition and distribution is such a significant portion of their business.

IV is both *valid* and *behaviorally sound* since it accurately captures the amount of product received by the organization and cannot be doctor. However, it is not *robust*, *useful*, and *integrative*, since it should not be compared across organizations, does not provide a clear guide for action, and only captures GIK acquisition processes. Additionally, it lacks *level of detail* because it does not indicate as to what categories or from where product is arriving.

$$IV = \text{Total inbound value received from donors}$$

Damaged product ratio (DPR) In the top-down analysis survey, respondents placed heavy emphasis on the quality of available products delivered to partners. The damaged product ratio (DPR) captures the proportion of receipts processed by the warehouse staff from donors that are damaged. Thus, DPR allows the organization to understand the quality of their inventory, as well as the quality of products that are being provided to them by specific donors.

DPR is *robust* since it can be compared across specific moments in time and other organizations, and is *useful* in that it provides decision makers with specific information on which donors are supplying them deficient receipts. It is not *valid* nor *integrative*, though, because whether or not a receipt is damaged is a subjective

process,¹⁴ and it only considers product acquisition. Further, DPR is not *compatible* because HHI does not capture the required data. It is therefore recommended that warehouse staff track what receipts are deserving of a “damaged” designation—notably, it also remains to be seen whether this metric is *economic* because this data may prove difficult to collect.

$$\text{DPR} = \frac{\text{Count of inbound receipts with damaged product}}{\text{Total count of inbound receipts}}$$

Inventory management metrics

Inventory turns (IT) Inventory turns (IT) is a measure of the number of times inventory is sold or used within a time period, usually a year. A low IT rate may indicate overstocking which unnecessarily drives up inventory holding costs for the firm, whereas a high rate may indicate that the organization occasionally suffers from stock shortages. For HHI, an IT ratio between three and six is reasonable.

IT as a metric is *robust* and *integrative* in that it is easily understandable across organizations and summarizes both inventory management and outbound ordering processes. However, IT is not *valid* nor *useful* in that a variety of factors may explain changes in IT, and it does not send a clear signal of action.

HHI does not currently capture the data required to calculate IT on a monthly basis, and therefore it is not currently *compatible*. It is recommended that HHI perform monthly inventory snapshots to acquire a consistent idea of organization’s inventory state and allow for this metric to be collected.

$$\text{IT} = \frac{\text{Number of units sold over a year}}{\text{Average number of units in inventory}}$$

¹⁴Many receipts to HHI and other humanitarian organizations are deficient in some way, because otherwise they would not have been donated. Thus, designating a product as “damaged” is subjective and potentially rather difficult to do.

Warehouse usage ratio (WUR) The warehouse usage ratio (WUR) is the average percentage of warehouse rack locations that are occupied by at least one unit of inventory. It is therefore not calculated as a percentage of total warehouse volume, yet it does indicate as to what extent the warehouse area is being utilized.

WUR is *valid* and *useful* in that is simple and easily interpreted by decision makers. It is not *robust* nor *integrative* as warehouse operations of different firms are not necessarily comparable, and it only concerns inventory management processes.

There are two conflicting requirements that must be considered when observing WUR. First, it is a positive result to have a warehouse that is nearly full, as this will maximize the number of product choices available to partners. At the same time, however, the warehouse should not be completely full since this does not allow the organization to be flexible with inbound receipts.

$$\text{WUR} = \frac{\text{Number of rack locations utilized}}{\text{Total number of rack locations}}$$

Obsolete inventory turns (OIT) The obsolete inventory turnover (OIT) rate tracks the quantity of inventory HHI is disposing of due to obsolescence or expiration with respect to total inventory levels. HHI does not currently collect the appropriate data to capture its OIT and thus this metric is not *compatible*. However, a monthly inventory snapshot would be sufficient to calculate this metric in the future.

Like standard inventory turns, OIT is *robust* and *integrative*, yet lacks *validity* and *usefulness*. Further, it may also lack *behavioral soundness*, since expired or obsolete inventory is not disposed of each month, but rather it is done so in bulk.

$$\text{OIT} = \frac{\text{Number of obsolete units disposed of over a year}}{\text{Average number of units in inventory}}$$

Volunteer hours (VH) The volunteer hours (VH) metric is simply the number of hours provided by volunteers to the GDC in any given month. In addition to connecting partners to GIK, HHI seeks to provide a means for volunteers to become involved with humanitarian work, and it for this reason (as well as the results of the top-down analysis survey) that VH is selected as a KPI.

VH is *valid* since it accurately captures the amount of work that volunteers contribute to HHI's operations, and is *robust* because this metric is comparable to other organizations. However, it is not *useful* since it does not send a clear signal of action to decision makers, nor is it *integrative* as it only concerns inventory management processes. Further, the indicator lacks *level of detail*, in that an hour of volunteer work does not signal more tangible concepts of performance.

$$\text{VH} = \text{Total count of volunteer hours}$$

Order processing metrics

Warehouse order cycle time (WOCT) The warehouse order cycle time (WOCT) is the average number of days to process an order from entry to shipment. HHI will ideally have a short WOCT as this indicates the organization can quickly process orders. However, it is also important to note that, like DTS times, WOCT may suffer when there are large number of outbound orders or inbound receipts.

It is recommended that HHI monitor the average count of days between each event that makes up an entire warehouse order cycle—specifically, these include order entry to release, release to pick, and pick to ship. By monitoring the combination of these cycle times, the organization will have a better idea of what events are slowing down (or speeding up) order processing.

Like DTS times, WOCT is a classic warehousing indicator and is thus *robust* and

useful to decision makers. Further, since WOCT can be broken down into order entry, release, pick, and shipment times, it carries a high *level of detail*. WOCT is not *valid* or *integrative*, however, as it only concerns outbound ordering processes and is likely dependent on receipt and order volume.

$$\text{WOCT} = \text{Avg. count of days between order entry and order ship, per receipt}$$

Outbound value (OV) The outbound value (OV) metric is given as the total value of GIK supplied to partners from HHI's GDC. Like IV, this indicator is extremely important to the organization since product acquisition and distribution is the primary purpose of their business. Additionally, OV ranked highest with IV in regards to the top-down analysis survey.

OV is *valid* since it accurately captures the amount of GIK distributed by the organization, and *integrative* because it considers both the ability for the organization to advertise its product and distribute it to others. It is not *robust* nor *useful*, though, as it is difficult to compare GIK distribution operations across organizations and does not send a clear signal of action to decision makers.

$$\text{OV} = \text{Total outbound value provided to partners}$$

Total demand satisfied (TDS) The total demand satisfied (TDS) is the proportion of value distributed to partners which is ordered. When a partner places an order HHI does not always have sufficient inventory to satisfy it. Thus, TDS provides a means for the organization to track how well their supply matches demand.

TDS is not currently *compatible* because the organization doesn't collect data on what products were ordered, only what products were delivered. It also remains to

be seen whether TDS is *economic*, as HHI would need to develop a standardized means to collect and store order demand information. If HHI does adopt TDS as a metric, it will be *valid* since it would accurately depict what products are being requested and delivered, *robust* in that it would be comparable across moments of time and other organizations, and *integrative* in that it merges both inbound receipt and outbound order processes. Though it does not inherently hold a sufficient *level of detail*, the organization can use TDS to determine what key items are in short supply, and therefore what items to request from donors.

$$\text{TDS} = \frac{\text{Total outbound value provided to partners}}{\text{Total outbound value demanded by partners}}$$

Perfect order ratio (POR) The perfect order ratio (POR) indicates the percentage of orders processed by HHI that are made without error. Of course, orders that are incorrectly processed is bad for the customer and HHI. Ideally, the firm should shoot for a POR of 100%, though realistically a more reasonable benchmark is 99% due to the high volume of volunteer staff that make up HHI warehouse operations.

HHI does not currently collect the required information to calculate POR, and thus it is not *compatible*. It is suggested that the organization begin to take note of calls from partners who claim orders were not processed or shipped correctly. This should be a more accurate exercise for HHI as they recently changed their handling fee policy to charge partners by the line item as opposed to pallet volume; thus, HHI is now more likely to hear from a partner if their order was incorrect. Of course, not all partners may express concern if their order is not perfect, and as a consequence POR is likely to be artificially high.

POR as a metric is *robust* and *useful* in that it is easily interpretable, comparable across firms, and provides a clear message to organizational leadership. It is

also *behaviorally sound* as it will incentivize logistics and warehouse to improve outbound order picking. At the same time, however, POR lacks *validity* since HHI may not necessarily hear of every incorrect order, and is not *integrative* in that it only considers outbound ordering processes.

$$\text{POR} = \frac{\text{Count of perfectly processed orders}}{\text{Total count of orders}}$$

Table 3.13: Selected KPIs for HHI

KPI	Acronym	Logistics activity	Equation
Dock-to-stock time	DTS	Donation processing	Avg. count of days between dock-to-stock, per receipt
Donor concentration ratio	DCR	Donation processing	$\frac{\text{Value received from largest donors}_{4,8}}{\text{Total value received from all donors}}$
Inbound value	IV	Donation processing	Total inbound value received from donors
Damaged product ratio	DPR	Donation processing	$\frac{\text{Count of inbound receipts with damaged product}}{\text{Total count of inbound receipts}}$
Inventory turns	IT	Inventory management	$\frac{\text{Number of units sold over a year}}{\text{Average number of units in inventory}}$
Warehouse usage ratio	WUR	Inventory management	$\frac{\text{Number of rack locations utilized}}{\text{Total number of rack locations}}$
Obsolete inventory turns	OIT	Inventory management	$\frac{\text{Number of obsolete units disposed of over a year}}{\text{Average number of units in inventory}}$
Volunteer hours	VH	Inventory management	Total count of volunteer hours
Warehouse order cycle time	WOCT	Order processing	Avg. count of days between order entry and order ship, per receipt
Outbound value	OV	Order processing	Total outbound value provided to partners
Total demand satisfied	TDS	Order processing	$\frac{\text{Total outbound value provided to partners}}{\text{Total outbound value demanded by partners}}$
Perfect order ratio	POR	Order processing	$\frac{\text{Count of perfectly processed orders}}{\text{Total count of orders}}$

Table 3.14: Evaluation of individual KPIs

Evaluation criteria	DTS	DCR	IV	DPR	IT	WUR	OIT	VH	WOCT	OV	TDS	POR	Count
<i>Validity</i>	–	+	+	–	–	+	–	+	–	+	+	–	6 / 12
<i>Robustness</i>	+	–	–	+	+	–	+	+	+	–	+	+	8 / 12
<i>Usefulness</i>	+	+	–	+	–	+	–	–	+	–	+	+	7 / 12
<i>Integration</i>	–	–	–	–	+	–	+	–	–	+	+	–	4 / 12
<i>Economy</i>	+	+	+	–	+	+	+	+	+	+	–	+	10 / 12
<i>Compatibility</i>	+	+	+	–	–	+	–	+	+	+	–	–	7 / 12
<i>Level of detail</i>	+	+	–	–	–	–	+	–	+	–	–	–	4 / 12
<i>Behavioral soundness</i>	–	+	+	–	+	+	–	–	–	+	+	+	7 / 12
Count	5 / 8	6 / 8	4 / 8	2 / 8	4 / 8	5 / 8	4 / 8	4 / 8	5 / 8	5 / 8	5 / 8	4 / 8	53 / 96

Note: + signifies that the metric fulfills this criteria, whereas – signifies that the metric does not

3.5.2 Measurement system

The performance measurement system composed of the individual KPIs observed in the preceding section is now analyzed from a systems perspective given the criteria defined by Caplice and Sheffi (1995). These six criteria include: *comprehensive*, *causally oriented*, *vertically integrated*, *horizontally integrated*, *internally comparable*, and *useful*.¹⁵

Internally comparable An *internally comparable* performance measurement system recognizes and allows for trade-offs between different dimensions of performance. From Table 3.14, it is clear that this system observes the primary trade-offs identified by Caplice and Sheffi (1994)—specifically, those between *integration* and *usefulness*, and *robustness* and *validity*. Using DTS time as an example, because it is very situationally specific (i.e., *valid*), it becomes less comparable (i.e., *robust*). Additionally, because DTS is not able to coordinate activities across different functions (i.e., *integrative*), it provides more guidance for the particular function it does fit into (i.e., *useful*). The majority of measures in this system observe these types of trade-offs, the main exception being TDS.

Useful A measurement system is *useful* if it is readily understandable by decision makers and provides a guide for action to be taken. First, of the twelve indicators

¹⁵Caplice and Sheffi (1995) define these performance measurement system criteria as follows. *Comprehensive* indicates that the system captures all relevant constituencies and stakeholders for the process. *Causally oriented* indicates that the system tracks those activities and indicators that influence future, as well as current, performance. *Vertically integrated* indicates that the system translates the overall firm strategy to all decision makers within the organization and is connected to the proper reward system. *Horizontally integrated* indicates that the system includes all pertinent activities, functions, and departments along the process. *Internally comparable* indicates that the system recognizes and allows for trade-offs between the different dimensions of performance. And *useful* indicates that the system is readily understandable by decision makers and provides a guide for action to be taken.

observed in Table 3.14, each is given as a simple and relatively straightforward ratio or value. What is more difficult to determine, however, is whether these metrics provide a guide for action. From an individual perspective, seven of the twelve indicators observed here were determined to fit the *usefulness* criteria. Thus, the majority of this system allows for inferences that can be directly acted upon. Those that do not, on the other hand, usually indicate a quantification of the organization's overall mission—these include IV, IT, VH, and OV. Thus, this system provides a mix of both metrics that can be acted upon, and metrics that demonstrate high-level organizational strategy.

Comprehensive A *comprehensive* performance system captures all relevant constitutencies and stakeholders. This system developed here surely does, as it considers HHI logistics staff through inventory management metrics, the donors to HHI through donation processing metrics, and partners to HHI through order processing metrics. In addition, HHI staff that are not directly related to the logistics department derive value from this system, since it touches on other departments within the organization such as resource development, and monitoring and evaluation.

Causally oriented A metric system is *causally oriented* if it tracks those activities that influence future and current performance. For one, this system certainly tracks and influences current performance, as the measures provided here can be evaluated on a continual basis. Further, seven of the twelve indicators were observed to be *useful* in that they provide decision makers a legitimate means for action. This system is therefore *causally oriented*, since it allows the organization to continuously monitor performance, as well as influence current and future operations.

Vertically integrated A metric system that is *vertically integrated* translates the overall firm strategy to decision makers within the organization, and is connected to the proper reward system. First, this system focuses on monitoring the primary mission of HHI, which is to connect medical products that are useful and of high-quality to partners. For example, DTS and WOCT monitor time efficiency of GIK receipt and distribution, DPR and POR monitor the quality of these flows, TDS monitors the ability of HHI to connect partners to these products, and IV, OV, and IT monitor the volume of GIK that is received and distributed. Additionally, the majority of these indicators are behaviorally sound, by either discouraging or preventing system gaming. Thus, this system can be said to be *vertically integrated*.

Horizontally integrated Finally, *horizontal integration* indicates that the system includes all pertinent activities, functions, and departments along the process. Although this system is integrated across logistics activities and touches on other departments within HHI, it is not horizontally integrated across the organization as a whole. Another KPI system could be developed from a organizational level; however, this system as described here is specific to the logistics department.

3.5.3 Monitoring the system and suggested presentation

The proposed logistics KPI system outlined in this section was handed off to HHI's Director of Global Logistics in the spring of 2013. Included with the system was the process by which each indicator can be calculated, its usefulness as a performance metric, and how it should be interpreted. A Microsoft Excel spreadsheet was also passed on to HHI which included the value of each indicator calculated for as far back in time as possible. Ultimately, categorizing KPIs into a single repository like a

spreadsheet makes it easy to analyze and visually represent the system with respect to time, and also helps to standardize the process by which KPIs are recorded.

In regards to presentation, it is suggested that this system be discussed at both HHI's Logistics Staff and Leadership Team meetings. First, it is recommended that at Logistics Staff meetings each individual KPI be discussed in detail to develop a greater understanding of why positive trends, negative trends, or anomalies, if any, are occurring. Second, at Leadership Team meetings, it is recommended that the Director of Global Logistics distributes the KPI system as described above, and discusses a few metrics that were highlighted as noteworthy during the Logistics Staff meeting. The lessons learned in the Logistics Staff meeting can provide leadership within HHI a better understanding of the state of warehouse activities.

In addition, and perhaps most important of all, presenting logistics KPIs at the Leadership Team meeting will help to merge those other functions of the organization, such as fundraising, marketing, and finance, with HHI's logistics and supply chain operations. Ultimately, many of the metrics outlined in this section, while specific to supply chain operations, have repercussions that extend to other areas of the organization. Thus, this performance measurement system will allow the entire organization to better understand and guide its operations and strategy as a whole.

3.6 Summary of approach

Although this case study is specific to HHI, its over-arching purpose is to demonstrate a process that is transferable to other humanitarian organizations interested in developing their own KPI systems. The list below summarizes the approach to this study, which can be used by others for this purpose.

1. Acquire foundational information concerning the organization, including its history, opera-

tional practices, available data, and high-level strategy

2. Conduct bottom-up analysis of logistics data to identify what activities are important to the firm's day-to-day operations, as well as relevant trends and non-trends in these activities
3. Conduct top-down analysis of organization—i.e., through direct discussions, a survey, etc.—to identify the firm's mission and objectives in regards to logistics and supply chain operations, and what desired outcomes are representative of this strategy
4. Merge bottom-up analytical approach with top-down qualitative approach to build preliminary KPI system
5. Showcase preliminary system with relevant stakeholders within the organization for feedback
6. Build final KPI system based off reception and feedback, and determine its mode of presentation
7. Use system operationally and modify with time, as appropriate¹⁶

¹⁶As this case study was completed in the spring of 2013, there was no time to carry out this final step. Of course, KPI systems are not permanent creations and must change with respect to organizational goals as well as any identified flaws.

Part II

Performance Measurement and the Humanitarian Marketplace

Chapter 4

Market Characterization and Implications

“Presuming to identify trends in humanitarian action is a perilous business. The very meaning of humanitarianism has become elusive, as a new set of actors has claimed it as part of a new, more interventionist international order. As the definition of humanitarianism has been stretched, so identifying the actors on the humanitarian stage has become more difficult. The cast of characters has changed significantly in recent years, to include new, often unfamiliar faces.”

—Macrae (2002, pp. 5)

The purpose of this chapter is to identify quantitative trends in the humanitarian marketplace using high-level non-profit IRS data, and to compare them to those depicted in recent academic and organizational literature with the ultimate goal of characterizing the competitive nature of this market. First, this chapter defines the humanitarian and philanthropic marketplace in general, discusses its participants and their incentives, and identifies important differences between for-profit and philanthropic markets. Data derived from the National Center for Charitable Statistics

(NCCS) is then used to define macro trends in the United States non-profit international relief sector, focusing on four areas—market expansion, fundraising, sources of funding, and concentration. Additionally, in this section the merits and limitations of using NCCS data to identify trends in this fashion are discussed. Finally, those trends observed in the literature are compared to those observed quantitatively in an attempt to characterize the competitive nature of the humanitarian marketplace.

4.1 The philanthropic marketplace

For some, it is difficult to imagine that the environment in which organizations, donors, and recipients of charity interact should be thought of as a “marketplace.” However, charity can be purchased and exchanged much in the same way as goods and services in traditional markets. Further, participants in the philanthropic sector are not immune to interests and incentives found in the for-profit sector.¹ Thus, one should regard the humanitarian relief and philanthropic system in general as dynamic markets, where firms compete for donations and the ability to serve beneficiaries.

4.1.1 Participants and incentives

The market for philanthropic goods and services, like traditional markets, includes suppliers—those that give to charity—and demanders—the fund-raising charities themselves (Andreoni, 2006). There is, of course, a third layer to this model that is perhaps most important yet often forgotten, and that is the beneficiaries of charity. At the most basic level, the philanthropic marketplace consists of these three

¹The firms that provide charity are nearly always non-profit organizations, and therefore the philanthropic sector should be thought of as a subset of the non-profit sector. This is largely due to the fact that charities, generally speaking, provide social goods which are much easier to raise revenue for if under non-profit status.

participants—*donors, service providers, and beneficiaries.*

In regards to the relationship between donors and non-profit firms, Wolpert and Reiner (1984) explain that each party has a wide range of possible motivations and expectations concerning their own and the other party's actions. The authors argue that preferences over control and the targeting of donations are key areas in which donors and charities can disagree. For one, it is understandable that charitable firms would generally like donations not to be targeted, as this allows them to maintain greater control over their operations and avoid inefficient distribution of donations as seen in, for instance, the aid abundance problem. At the same time, however, donors often prefer to see their donations put towards projects that either align with their own philosophies or are in the public eye for promotional purposes. Thus, between service providers and donors, tension exists in regards to the degree of freedom that charities have over their revenues.

Additionally, Cooley and Ron (2002) insist that interactions between providers and beneficiaries of aid, like those between donors and providers, can be modeled as a principal-agent relationship. The authors argue that without adequate monitoring, recipients of aid may be incentivized to appropriate the provider's resources for opportunistic gain, while at the same time the provider may be disincentivized to report this activity unless donors can credibly guarantee that funding will continue. There then exists a situation, described by Cooley and Ron as the multiple-principals problem, where recipients of aid are able to play contractors and donors against each other. Of course, this environment can only exist where there is sufficient interest in assistance—when interest is scarce, so too will be aid.

The relationship between donor and beneficiary is perhaps the most interesting, however, mainly because neither party comes into contact with one another. Thus, feedback regarding the quality of goods and services delivered to beneficiaries arrives

to the donor via the provider itself, or in rare cases the media and government.² Ultimately, this disconnect between donor and beneficiary serves as one of the main drivers behind the problem of ascertaining the performance of philanthropic organizations, yet it is also necessary for the efficient delivery of aid.³

4.1.2 Philanthropic versus for-profit markets

Though philanthropy should be regarded as a market in the same way as traditional for-profit markets, there are a number of key differences between the two that must be addressed. First, Glaeser (2006) identifies the three legal differences between non-profit and for-profit firms. For one, the revenues of non-profit organizations are not taxed by the federal government. Second, non-profits are held by the non-distribution constraint, which prevents them from disbursing profits to owners or employees. Finally, non-profits do not have owners and their boards are self-perpetuating—that is, they can indefinitely renew themselves.

Although the success of many for-profit firms can be attributed to the investments of its shareholders, non-profits do not have this luxury. This raises complications regarding the existence of non-profits in an economical sense. As noted by The Economist (1998):

“For economists, the non-profit organisation is something of an evolutionary oddity. Without the forces that drive conventional firms—shareholders, stock options and, of course, profits—it has still managed to thrive in the market economy.”

Thus, instead of thinking of the non-profit in terms of those forces referenced above, the existence of non-profit firms can be explained as a result of the types of

²For example, donors may hear of the misappropriation of charitable funds through the media in cases of fraud or other forms of scandal.

³Imagine the alternative, where each donor sought to directly provide their charity to beneficiaries. This would obviously be a wildly inefficient system.

services and goods they provide. As seen in the Urban Institute's *Nonprofit Almanac*, public charities mainly locate themselves within the education, health care, and human services sectors. These are principally social goods—that is, they are meant to benefit the community or society as a whole. Accordingly, non-profits in general have a much easier time raising revenue for social goods than for-profit firms, as donors have more confidence in non-profits that their contributions will be distributed for that particular social cause.⁴

Further, since the performance of non-profits is inherently difficult observe, the methods used by donors to choose which providers to fund are primarily subjective. As a result, advertising, marketing, and fundraising activities become the primary means by which firms acquire revenue from donors, rather than by demonstrating value through its service quality. The goal of the organization also plays an important role. Missions of international relief NGOs, for instance, vary by a wide margin; thus, corporate and individual donors can use the NGO's mission as a tool to align their philanthropic objectives and strategy (e.g., marketing, political, etc.) with those of the providing firm (Porter and Kramer, 2002). Furthermore, word-of-mouth, reputation, and accreditation improve the competitiveness of the firm, and in fact there are existing services that will, for a fee, provide users charity verification and matching services.⁵ Finally, while IRS Form 990 data can offer some insight into the firm's operations, this information can only reasonably be used to identify firms that are financially weak and one should hesitate to use it as a tool to measure programmatic capabilities across various firms.

⁴Hospitals are a notable exception to this rule, as many exist in for-profit form. However, this is largely due to the fact that hospitals can raise revenues in other ways besides direct donations such as, for example, charging patients or insurance providers for care.

⁵For example, GuideStar (<http://www.guidestar.org>).

4.2 Quantitative macro trends in the United States non-profit international relief sector

This study arose out of an interest in the ways in which market mechanisms within the international relief sector operate inefficiently. In particular, the disconnect between donors and beneficiaries, and the inherent difficulty in distinguishing quality amongst non-profit organizations likely results in inefficient matching between donors and humanitarian firms. Thus, it is an interesting exercise to determine how mechanisms used to match donations to service providers can be improved, and within this context, what role signaling quality through performance measurement can play.

To begin, however, it is fundamentally important to characterize the structure of the humanitarian marketplace. This is due to the fact that different market structures will inherently imply different policy prescriptions—for example, a marketplace with excessive competition will act different than one which is well-sized, which acts different than one which is cartelized. Therefore, this study first attempts to identify quantitative macro trends in the international relief sector in order to analyze the structure of this market, specifically in regards to market expansion and volume, the importance of fundraising, sources of funding, and concentration.

4.2.1 Research methodology and dataset

Dataset and approach

The data used in this study is obtained publicly through the National Center for Charitable Statistics (NCCS), which serves as the national repository of data on the non-profit sector in the United States.⁶ The NCCS was established in 1982 as a

⁶See <http://nccs.urban.org/> (accessed 21 February 2013).

project under the Urban Institute’s Center on Nonprofits and Philanthropy (CNP).

NCCS mainly derives its data from Internal Revenue Service (IRS) filings. Specifically, organizations that wish to be designated under federally tax-exempt status must file an IRS Form 990 annually, which provides information on the organization’s revenue stream, balance sheet, program service accomplishments, compensation, and other areas pertinent to non-profits. The IRS Form 990 must also be made available for public scrutiny by federal statute for all non-profit organizations with incomes greater than US\$50,000.⁷ Notably, there are certain non-profits that are not required to file an IRS Form 990, including organizations that have not received tax-exempt status from the IRS, most faith-based organizations (e.g., churches), and state institutions, amongst others.

Within the NCCS database, data obtained for this study is derived from Core Financial Files (CFF) between 1989 and 2010.⁸ The CFF includes approximately 60 financial variables (i.e., fields) from the IRS Form 990 and 990-EZ. From these files, 501(c)(3) public charities that classify themselves with a National Taxonomy of Exempt Entities (NTEE) code of Q33, which applies to “International Relief” non-profits, are isolated.⁹ Organizations with this classification are defined as:

⁷Specifically, non-profit organizations with incomes greater than or equal to US\$200,000 *or* assets greater than or equal to US\$500,000 must file an IRS Form 990. Those organizations with incomes less than US\$200,000 *and* assets less than US\$500,000 are required to file a Form 990-EZ, which is a shorter and less-detailed version of the Form 990. Further, organizations with incomes less than US\$50,000 are allowed to file a Form 990-N, which is a simple eight-question, electronic return. This analysis considers data derived from IRS Forms 990 and 990-EZ, which are the only non-profit return forms of which the IRS provides electronic images.

⁸See <http://nccs.urban.org/database/overview.cfm> (accessed 21 February 2013).

⁹The NTEE classification guidelines can be found at: <https://nccs.urban.org/classification/NTEE.cfm> (accessed 21 February 2013). The code is typically given as an alphanumeric, beginning with a single letter and followed by a two-digit (i.e., decile) code. The first letter represents the broad subsector of the non-profit, while the decile code subdivides the subsector into specific activity areas. For example, the “Q” in Q33 applies to International, Foreign Affairs, and National Security organizations, while the “33” designates the organization specific to International Relief.

“Organizations that work to relieve poverty in developing countries by providing funds, technical assistance and supplies which improve the health, education, welfare, social well-being and self-reliance of individuals and families. Also included are organizations that provide relief services in response to a major disaster or large-scale emergency that occurs abroad.”¹⁰

Thus, humanitarian organizations make up a subset of all Q33 organizations, which is important to consider throughout this analysis. Any comments made on this dataset hereafter will be applicable to the international relief sector in general, as opposed to humanitarian organizations specifically.

For each CFF year, all observations are filtered high-to-low by total revenue, and the following variables for those organizations in each year that fall within the top 25 of all organizations in terms of revenue are observed:

1. Rank in total revenue that calendar year
2. Employer identification number (EIN)
3. Fiscal year¹¹
4. Name of organization
5. Total revenue
6. Fundraising expenses
7. Total expenses

¹⁰See <http://nccsdataweb.urban.org/kbfiles/322/NTEE-CC-Manual-2007a.pdf> (accessed 21 February 2013).

¹¹When the image of an IRS Form 990 for an organization from a calendar year is missing, NCCS will take a Form 990 of that organization from the following or previous calendar year to maintain continuity in rankings. Thus, fiscal year and calendar year will occasionally not match up perfectly. This is somewhat rare, and is not believed to impact the results of the analysis.

8. Revenue from government grants¹²
9. Revenue from indirect public support
10. Revenue from direct public support

Additionally, the Business Master File (BMF) from the NCCS database is observed for each year between 1989 and 2010 to obtain general financial information on all Q33 organizations filing with the IRS.¹³ The information from the BMF allows for information on the top 25 firms in the international relief sector in terms of revenue to be cross-referenced with aggregate information from the sector as a whole. The following fields are observed from the BMF:

1. Non-zero, non-null observations¹⁴
2. Minimum observed revenue
3. Maximum observed revenue
4. Average observed revenue
5. Median observed revenue
6. Standard deviation of observed revenue
7. Total observed revenue

There are a number of reasons why this dataset is particularly attractive from a market analysis standpoint. First, it provides hard numbers on private philanthropic giving where quantitative information lacks severely. For instance, although

¹²The fields for revenue from government grants, revenue from indirect public support, and revenue from direct public support were not included on the IRS Form 990 until 1998; thus, this data is only available between 1998 and 2010.

¹³See <https://nccs.urban.org/database/overview.cfm> (accessed 21 February 2013).

¹⁴Non-zero, non null observations indicate the precise count of Q33 organizations filing a Form 990 or 990-EZ to the IRS that calendar year.

data concerning government contributions to international relief and humanitarian endeavours is decent and is collected through reputable institutions such as the Organisation for Economic Co-operation and Development (OECD) and World Bank, Randel and German (2002) note that there is no standard method for recording private contributions to humanitarian assistance, while Fearon (2008) goes as far as to describe the data on private contributions as “terrible.” Second, those numbers derived from the NCCS database are obtained from forms that are filed to the IRS, the US government agency responsible for tax collection and tax law enforcement; thus, these forms are assumed to be filled out in good faith and as such are reliable.¹⁵ Third, this study is not the first to use aggregated IRS Form 990 data to arrive at conclusions of market structure. Notably, Frumkin and Kim (2001), Castaneda et al. (2007), and Thornton and Belski (2010) all use data derived from the IRS Form 990 to draw empirical conclusions on the non-profit sector. Above all, however, the primary reason for using this dataset is that it allows for comparisons across actual quantitative figures with qualitative information as observed in literature on international relief and humanitarian organizations.

Dataset limitations

There are, of course, some notable limitations that come with drawing conclusions from IRS Form 990 data. First, only organizations that are tax-exempt entities within the United States government are required to complete a form; thus, information on international relief and humanitarian organizations that operate outside the United States are not included in the NCCS database. Second, there are likely to be

¹⁵Of course, both for-profit and non-profit organizations have been known to accidentally and purposefully misrepresent themselves to the IRS. However, for the sake of this analysis these instances are assumed to occur at an insignificant rate compared to those organizations that represent themselves honestly and correctly.

errors either accidentally or purposefully when organizations fill out the Form 990, as well as when the NCCS compiles this information into their database. However, since conclusions are drawn from a large number of organizations per calendar year and occurrences of accidental or purposeful misrepresentation exist few and far between, this is assumed to have a negligible impact on the results of this analysis. Finally, and most importantly, the small subsets of fields on the Form 990 only allow for broad generalizations concerning the non-profit sector as a whole, rather than more targeted conclusions such as the performance of specific organizations. As Tuckman (1998, pp. 190) argues:

“Existing data collection instruments, such as Internal Revenue Service (IRS) Forms 990 [sic], are neither well designed to capture commercial activities nor are they suited to evaluate how effectively a charitable mission is carried out either absolutely or relative to the profit-driven mission. Rought rules of thumb—such as the percentage of donated revenues devoted to programmatic uses or the percentage of revenues from unrelated business income—will not be adequate either as measures of fiscal responsibility or of management effectiveness.”

Thus, although the IRS Form 990 provides a wealth of data to be collected and analyzed, it is important to remember that any conclusions drawn from this form must be carefully crafted as not to overextend analytical boundaries.

4.2.2 Revenue and market volume

To begin, the total revenue acquired by US non-profit international firms is observed with respect to time, as well as the total number of active, tax-exempt firms. Figure 4-1 illustrates the exponential growth in the number of firms in this market. In 1989, there were 219 acting international relief organizations. By 2010, the sector had grown over ten-fold to 2,307 acting firms.

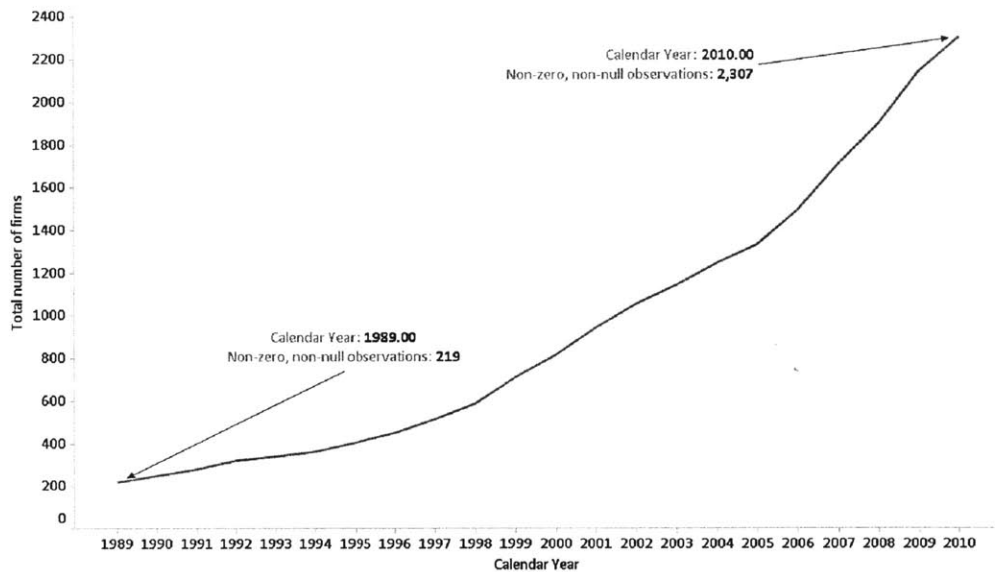


Figure 4-1: Count of US non-profit international relief firms, 1989—2010

The total revenue to this sector has also grown exponentially, as depicted in Figure 4-2. In 1989, international relief non-profits in the US raised US\$1.3 billion in revenue, primarily from cash donations, gifts-in-kind, and service fees. By 2010, this had grown to US\$11.5 billion. Notably, the market as a whole took a hit in funding after 2008, when total revenues were at a high of US\$13.1 billion.

Additionally, the growth in total revenue of this sector is observed with respect to various revenue brackets. Figure 4-3 illustrates this growth for the four largest firms in terms of revenue (orange), firms 5 through 8 (green), firms 9 through 25 (red), and all others (blue). Though each revenue bracket has expanded, the eight largest firms in the market have experienced the most extreme growth. These same firms took the largest hit in terms of funding between 2008 and 2010.¹⁶

¹⁶To serve as a reference, the largest international relief organizations in the US over the last ten years have traditionally been AmeriCares, Feed the Children, Food For The Poor, International Committee of the Red Cross (ICRC), and World Vision International.

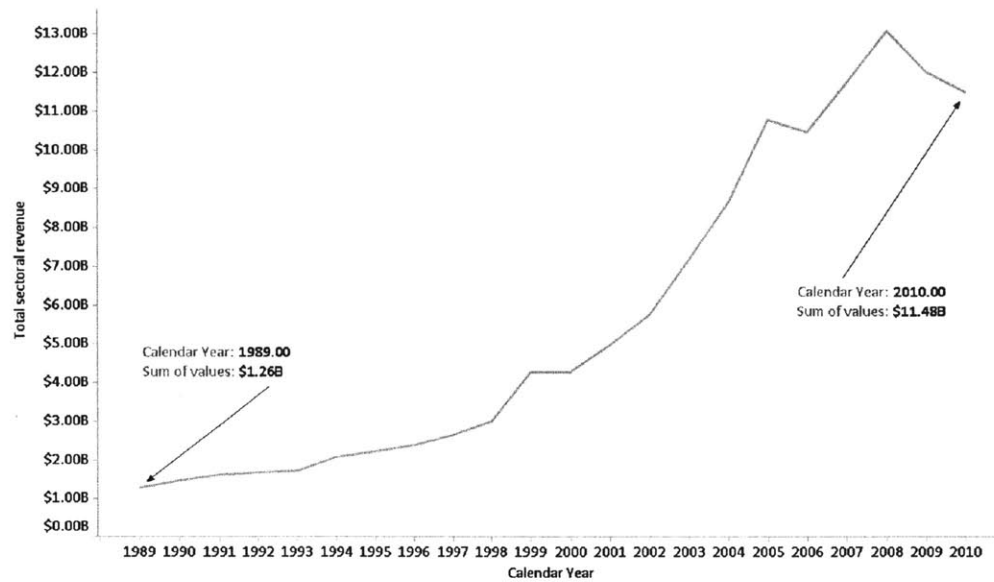


Figure 4-2: Revenue to US non-profit international relief sector, 1989—2010

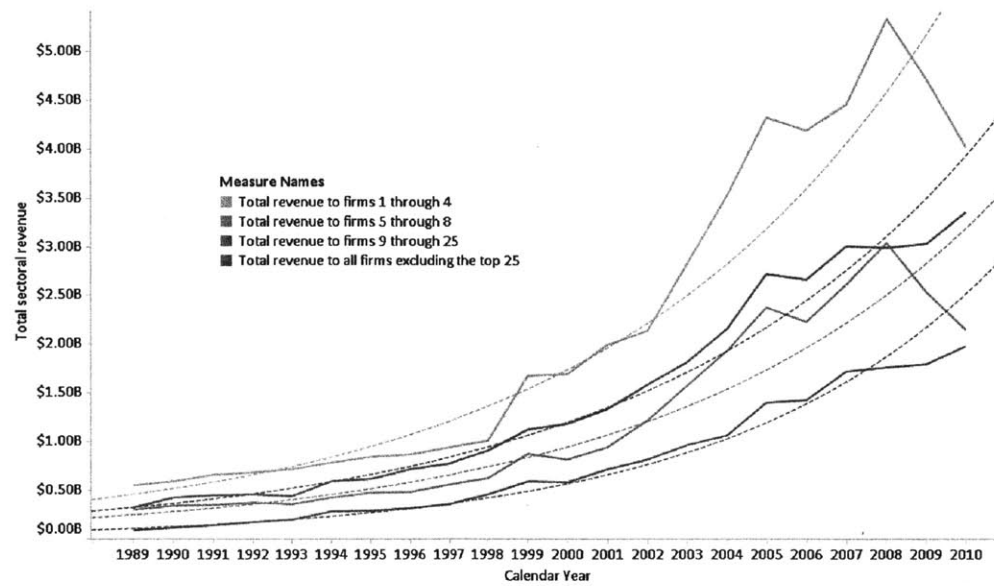


Figure 4-3: International relief non-profits by revenue bracket, 1989—2010

This growth is also represented as a percent change in the revenue of the average organization within different brackets, as shown in Figure 4-4. Here, it is observed that the average revenue of organizations within each bracket grew similarly from 1989 to 1998; however, from 1998 to 2010, the largest 25 organizations and specifically the top eight have grown the most dramatically. Notably, the average revenue of all other organizations not in the top 25 of the market has remained relatively flat since 1989, and has perhaps decreased if inflation is taken into account.

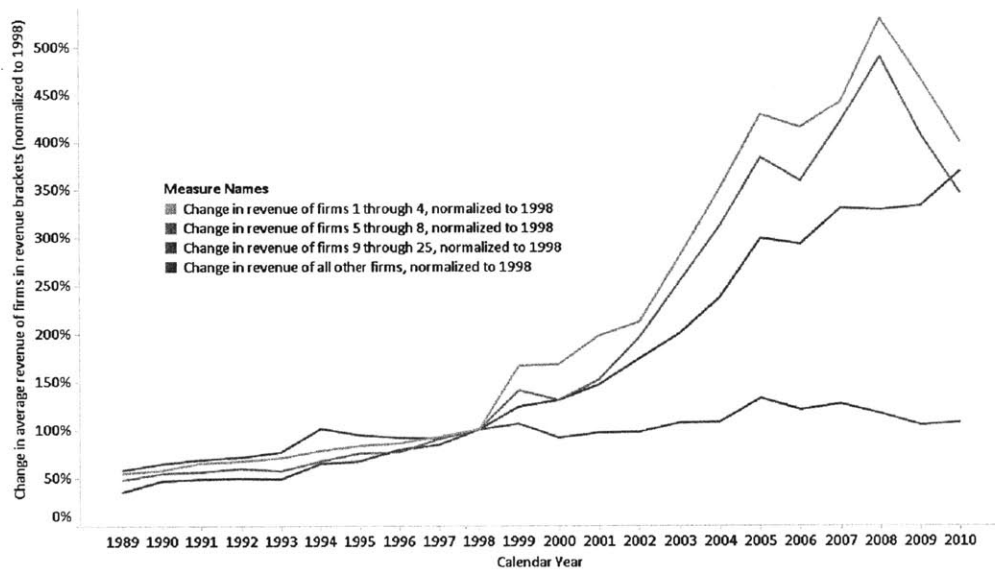


Figure 4-4: Percent change in average revenue of international non-profits within revenue brackets (normalized to 100% in 1998), 1989—2010

4.2.3 Fundraising expenses

Trends regarding the fundraising expenses of international relief organizations were then observed from the CFF. First, the fundraising expense ratio (FER)—calculated as the percent of the firm's expenses used for fundraising activities within a given

year—was considered for the largest 25 firms in the market in terms of total revenue. Figure 4-5 plots the average FER of the largest 25 organizations with respect to time. Excluded from this dataset are those organizations that reported a FER less than 0.1% in any given year, as the accuracy of these data points is debatable. Interestingly, the percentage of expenses international relief firms place towards fundraising has decreased over time, from approximately 10% on average in 1989 to roughly 5% in 2010; however, it does appear that the average FER for these large organizations may have plateaued at this 5% mark in recent years.



Figure 4-5: Average fundraising expense ratio (FER) for largest 25 international relief non-profits, 1989—2010

In addition to observing fundraising with respect to expenses, fundraising is considered with respect to the total revenue that an organization acquires in a given year. Essentially, if a clear relationship is observed between fundraising and captured revenue, one may begin to better estimate as to what degree fundraising activities

benefit international relief organizations in terms of funding.

Figure 4-6 serves as a starting point for this analysis by graphically representing the fundraising expenses an organization occurs with respect to the total revenue it acquires for the largest 25 firms in the market. Again, those observations in which an organization reports a FER less than 0.1% are also excluded from this analysis due to concerns regarding their accuracy. In this plot, each series of colored dots represents a unique organization between 1989 and 2010, and each point represents the fundraising expenses and total revenue for a single organization in a given year.¹⁷ For instance, the light blue dot annotated in Figure 4-6 represents Feed the Children in 2006, when the organization incurred fundraising costs of US\$72.6 million and acquired US\$649.8 million in total revenue.

¹⁷Because only the top 25 firms are observed for each calendar year, many of the data series that represent organizations consist of fewer than the 22 points that span the 1989 to 2010 timeframe, since many organizations may be in the top 25 in terms of revenue one year and then drop out in subsequent years.

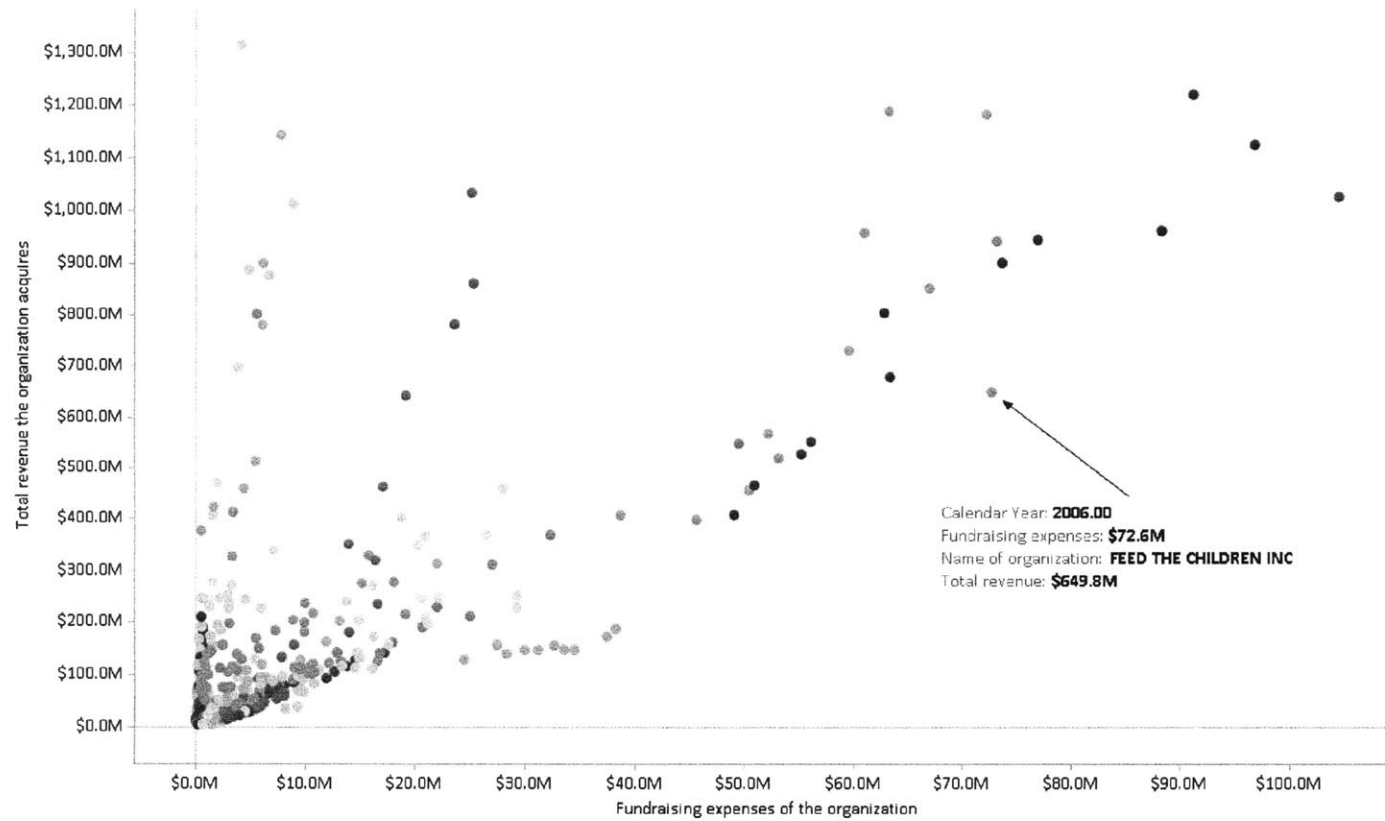


Figure 4-6: Revenue and fundraising expenses of largest international relief non-profits, 1989—2010

Although it is somewhat difficult to observe trends from Figure 4-6 due to its density, it does begin to illustrate the fact that levels of fundraising will impact different organizations to varying degrees. Figure 4-7 attempts to clarify this point by isolating Figure 4-6 for three organizations—Heart to Heart International, Food for the Hungry, and Children International.¹⁸ From this figure, we see that fundraising expenses and total revenue for these organizations are linearly related. In fact, these terms appear to be linearly related for nearly all firms within this dataset, though some provide trend lines that are better fits than others.

An important conclusion from this analysis is that each firm within this sector has what can be referred to as a unique “marginal benefit of fundraising” (MBF) that is essentially constant. For instance, given this plot, Heart to Heart International may speculate that their MBF is 163.3—that is, for every fundraising dollar they incur, they can expect approximately US\$163.3 in total revenue.¹⁹ Notably, one major limitation of this analysis is that, as previously mentioned, the total revenue of an organization consists of both cash donations and GIK. This is problematic for two main reasons. First, organizations themselves often value GIK internally, and thus there may be different assignments across relief firms for similar products. Second, and more importantly, fundraising expenses are not necessarily used for the acquisition of GIK. For instance, Heart to Heart International only fundraises for cash donations; thus, a future analysis may segregate cash from total revenue and provide a clearer picture on the MBF for international relief organizations.

¹⁸These organizations were chosen to represent Figure 4-7 for two reasons. First, their fundraising expenses and total revenue values are similar, and can therefore be easily viewed on a single plot. Second, these organizations provide good visual representations that these terms are linearly related. In reality, some organizations allow for better evidence of this assertion than others.

¹⁹MBF values of Food for the Hungry and Children International are 19.2 and 8.5, respectively.

Figure 4-7: Revenue and fundraising expenses of select organizations, 1989–2010

4.2.4 Distribution of funding sources

Beginning in 1998, the IRS Form 990 required non-profits to identify the value of received donations from three separate funding sources—direct public support, indirect public support, and government contributions. GuideStar, which provides information on non-profit firms in the United States, defines these sources as follows:²⁰

- Direct public support—contributions received directly from individuals and foundations.
- Indirect public support—contributions received through federated fundraising campaigns such as the United Way or the Combined Federal Campaign. Also included here are monies received from affiliated organizations (parent, subordinate, or supporting organizations).
- Government contributions (grants)—contributions from federal, state or local governments that are considered to provide a direct benefit to the general public. These contributions are distinct from monies received from government contracts or fees for services [sic].²¹

From Figure 4-8, donations from direct public sources provides the greatest percent contribution to the largest 25 international relief firms, and has been increasing steadily since the early 2000s at a rate of 0.7% per year. The percent contribution from government grants has also increased over this period, at a slightly lesser rate of 0.6%. Conversely, the contribution from indirect public support has decreased at a rate of 1.3%. In 2010, approximately 70% of revenue to the largest 25 international relief organizations came from direct public support, 24% from government grants, and 6% from indirect public support.

²⁰See <http://www.guidestar.org/rxa/news/articles/2001-older/understanding-the-irs-form-990.aspx> (accessed 2 March 2013).

²¹GuideStar notes that the distinction between government grants and contracts is “tricky.” In their words: “For example, suppose that a local government gives a rural health clinic \$5,000 to support its operations. The clinic decides to use this entire amount to provide free Lyme disease inoculations to county residents. This is a government grant. If the \$5,000 was given to the clinic in order to inoculate government workers against Lyme disease, and stipulated that the money be used for that purpose alone, it would be considered a government contract.”

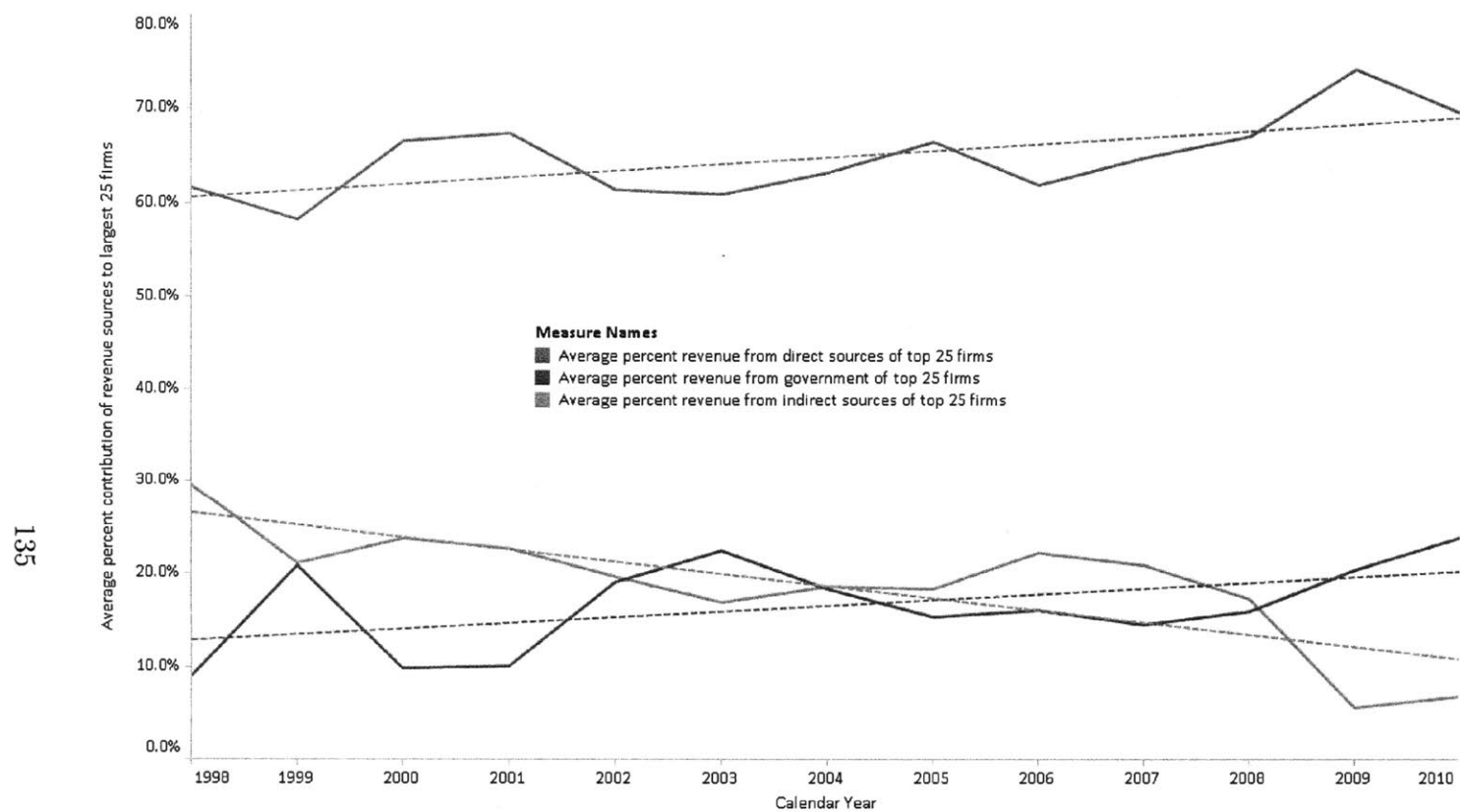


Figure 4-8: Funding sources of largest international relief non-profits, 1989—2010

4.2.5 Concentration

In microeconomic and market theory, the actions of firms in any given sector fall somewhere in between monopoly and perfect competition. Concentration—that is, the market share of the sector’s largest firms—has traditionally provided the most useful corollary to competition. An example of a highly concentrated market is in aircraft engine manufacturing, where a small number of firms provide the majority of sales to the market (i.e., General Electric, Rolls-Royce, and Pratt & Whitney). Conversely, the machine shop sector is an example of a highly unconcentrated market, where a large number of firms fight for an extremely small share of total sales.

The level of competition in a market is typically inversely related to the level of concentration. Thus, industries that are highly unconcentrated experience competition at greater levels than industries that are highly concentrated. This is because concentrated sectors make it relatively easier for the largest organizations to dictate price or movements in the market, and may reduce threats of competitors by, for example, raising barriers to entry.²² Firms in unconcentrated markets do not have this luxury, and are more prone to competition directly based on quality and price.

To judge market competition, studies will rely on measures based on the number and relative size of firms in a sector (Baker, 2001). Though there are a number of indices that measure concentration, the two most commonly used are the Herfindahl-Hirschman Index (H-HI) and concentration ratios (Bikker and Haaf, 2000).²³

First, concentration ratios are defined as the total market share of a given number

²²Baker (2001) defines six forces that modify traditional competitive dynamics of markets, including effects on the mobility of purchasers, ease of entry, extent of horizontal and / or vertical integration between firms, the presence of non-profit entities, government regulation, and collusion.

²³Traditionally, the Herfindahl-Hirschman Index is abbreviated as HHI. However, because Heart to Heart International has already been referred to by this acronym throughout this thesis, the acronym “H-HI” is adopted to help differentiate between the two.

of firms. In this study, three concentration ratios are observed in this sector—firm-four, firm-eight, and firm-25.²⁴ Figure 4-9 plots these metrics between 1989 and 2010. Here, it is observed that each concentration ratio is experiencing a slightly decreasing trend over time. In 2010, the international relief sector’s firm-four (green), firm-eight (orange), and firm-25 (blue) ratios were 35%, 54%, and 83%, respectively; in 1989, these ratios were 44%, 67%, and 93%. To serve as a reference, in 2007 the firm-four, firm-eight, and firm-20²⁵ ratios of the aircraft engine and engine parts manufacturing sector were 74.3%, 81.3%, 89.4%, respectively, and 1.7%, 2.9%, and 5.6% for the machine shop sector (US Department of Commerce, 2013).²⁶

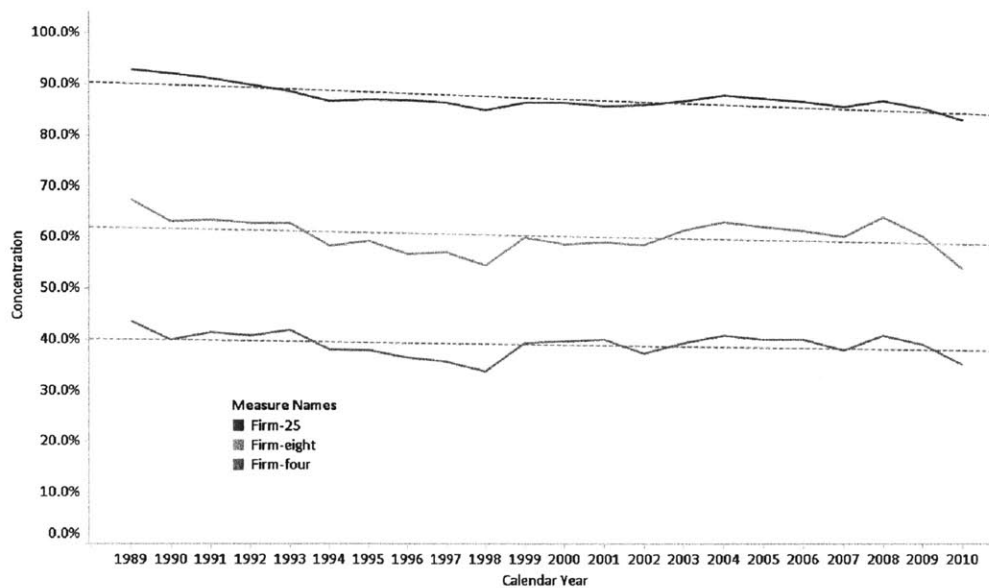


Figure 4-9: Selected concentration ratios, 1989—2010

²⁴Firm-four, for example, is defined as the total revenue acquired by the four largest firms in the market that year, divided by the total revenue of the sector.

²⁵The difference between firm-20 and firm-25 ratios can be considered negligible for the purposes of this study.

²⁶The “aircraft engine and engine parts manufacturing” and “machine shop” sectors have North American Industry Classification System (NAICS) codes of 336412 and 332710, respectively.

Second, H-HI is perhaps the most common measure of competition in a market. It is calculated as the sum of the squares of the market shares of the n largest firms within the sector, and is used as a screening tool for the United States Department of Justice when examining horizontal mergers (US Department of Justice, 2012).²⁷

Figure 4-10 plots the H-HI for the international non-profit relief sector between 1989 and 2010. Like the concentration ratios observed for this sector, its H-HI has been decreasing over this time. Specifically, the H-HI was calculated to be 0.071 and 0.046 in 1989 and 2010, respectively. To compare to the extremes, the H-HI for the aircraft engine and engine parts manufacturing, and machine shop sectors was 0.242 and 0.0003 in 2007, respectively (US Department of Commerce, 2013).

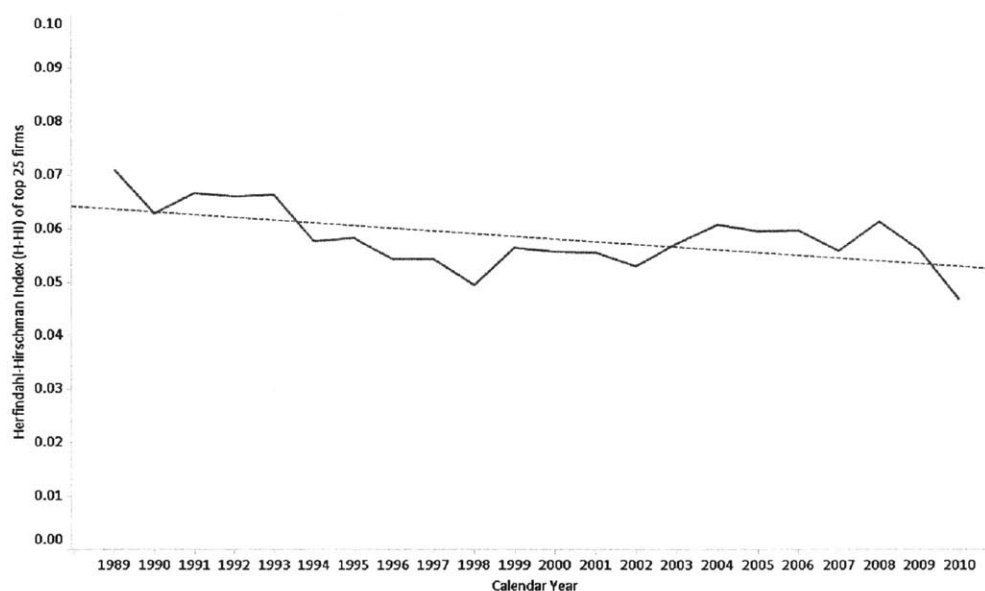


Figure 4-10: Herfindahl-Hirschman Index, 1989—2010

²⁷There are two forms of the Herfindahl-Hirschman Index (H-HI). The first considers market share as a decimal between 0 and 1, and thus ranges between $\frac{1}{n}$ and 1. The second considers market share as a percentage, and thus ranges between $\frac{10,000}{n}$ and 10,000. Here we use the first form, where $H-HI = \frac{1}{n}$ implies perfect competition and $H-HI = 1$ implies monopoly. The Department of Justice uses an n value of 50, though an n of 25 is used for this study due to data limitations.

Lastly, the total revenue acquired by international relief non-profits is observed with respect to the H-HI between 1989 and 2010, as illustrated in Figure 4-11. This allows for a clean visual representation of how the concentration and volume of this market has changed over time. Beginning in 1989, the sector had an H-HI of 0.046 and a total revenue of US\$1.3 billion, as represented by the data point in the lower right of Figure 4-11. In 2010, the sector had an H-HI of 0.071 and revenues of US\$11.5 billion, as represented by the data point in the upper right of this plot.

There are three distinct periods that are present on this plot, each illustrated by a red arrow. First, between 1989 to 1998 the market saw a steep decrease in concentration and a slight increase in total revenue—in fact, if inflation is taken into account, revenue would appear to be relatively static over this time. This period aligns with similar gains in the total number of acting firms in the market and total revenue as depicted in Figures 4-1 and 4-2, which essentially diluted the market shares acquired by the sector's largest organizations.

Second, between 1998 to 2008 the market saw a sharp increase in total revenue, accompanied by a slight increase in concentration. This matches with significant increases in funding to this sector relative to the growth of organizations, as seen in Figure 4-2, and in particular to the sector's largest firms, from Figure 4-3.

Finally, between 2008 to 2010 the market took its first major hit in terms of total acquired revenue, dropping from US\$13.1 to US\$11.5 billion. Additionally, the sector experienced a sharp decrease in concentration over this time. This aligns with the decline in funding after 1998 as seen in Figure 4-2, and especially to the largest organizations in the market, as depicted in Figure 4-3. Relative to Department of Justice standards, this market currently and throughout its history has existed in a highly unconcentrated state (US Department of Justice, 2012).

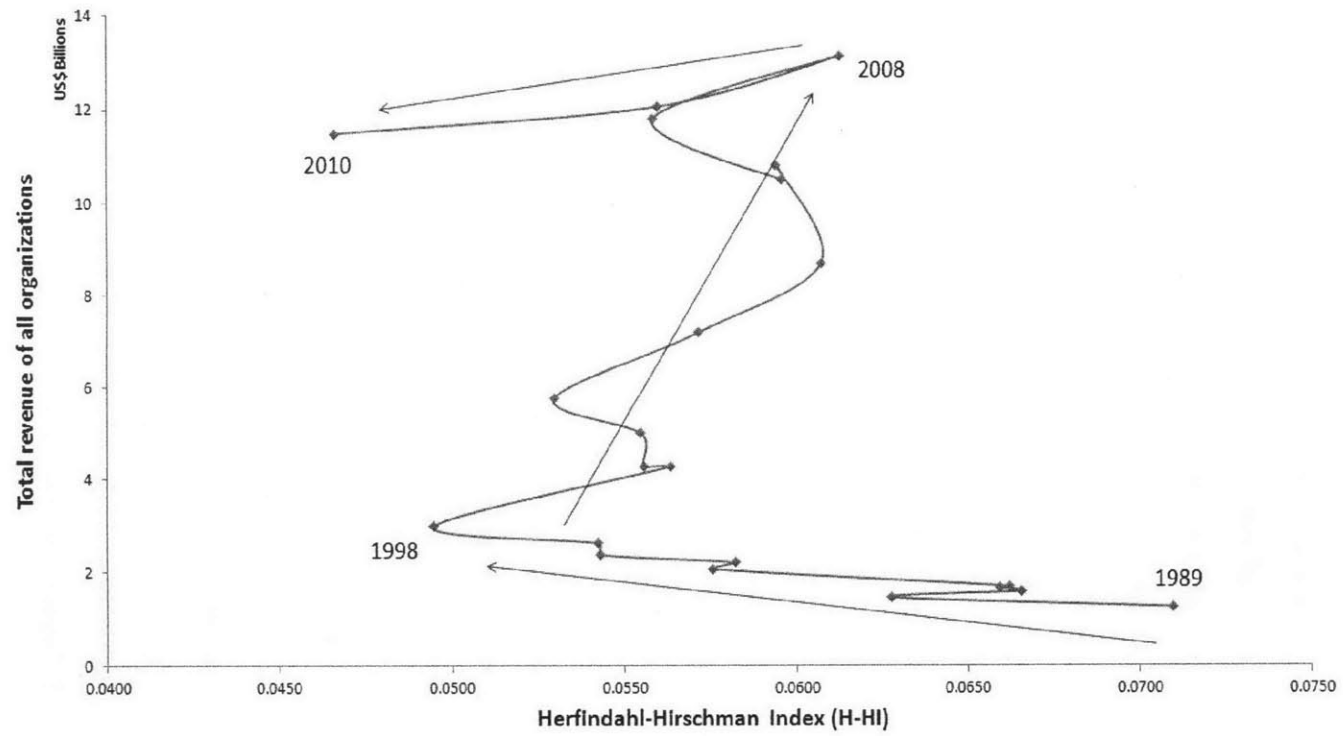


Figure 4-11: Total sectoral revenue versus Herfindahl-Hirschman Index, 1989—2010

4.3 Characterizing the humanitarian marketplace

4.3.1 Synthesis of literary and quantitative trends

Growth

The analysis above has shown that the count of international relief non-profits in the United States has grown exponentially over the last twenty years. This finding agrees with the majority of literature regarding firm growth in the market. For instance, Barnett and Weiss (2008b) argue that prior to the end of the Cold War a small number of large international relief agencies and organizations had a virtual monopoly on the delivery of humanitarian aid, whereas today the environment is more competitive and crowded.

In addition, the quantitative observations regarding total funding to these organizations are also supported in literature. Fearon (2008), who uses data on the funding sources of NGOs that received grants from the US Agency for International Development (USAID) between 1981 and 2004, notes a significant rise in emergency relief aid during the early 1990s. The author suggests a number of reasons for this—first, growth in aid funding reflects the increase in the total number of internally displaced persons (IDPs) at the end of the Cold War; second, the complex of international and governmental agencies as well as NGOs has succeeded in conceptualizing and “selling” IDPs as a category of persons requiring systematic humanitarian aid; and third, shifting major-power foreign policies to “postmodern imperialism” or “neotrusteeship” led to an increased use of international interventions that pursued security, developmental, and humanitarian goals.²⁸

Macrae (2002) agrees with this final assertion by Fearon. Throughout the 1990s,

²⁸For a summary of “postmodern imperialism” and “neotrusteeship” policies, refer to Chapter 2.

she argues that there was a developing consensus in the international community that security was linked to development activities within failing states and their neighbors, as made apparent by humanitarian interventions throughout the decade—e.g., Somalia, Haiti, Rwanda, East Timor, and Kosovo.²⁹ In the 2000s, American-led counterinsurgency operations in Afghanistan and Iraq further demonstrated an increased interest in merging humanitarian and developmental goals with those of security. Thus, these two decades established a new period in humanitarianism, defined by Macrae (2002) as the “new security agenda.”

As a result, changes in the humanitarian environment increased the demand for services provided by international relief organizations, and broadened their mandate to solicit funding from governments and private individuals, particularly in the United States and European Union. Large-scale intervention activities at the end of the 1990s and throughout the 2000s in the former Yugoslavia, Afghanistan, and Iraq represented the solidification of this marriage between security and developmental policies, paving the path for a surge in funding activities. This is why a spike in funding is observed in 1998 to 2008, as seen in Figures 4-2, 4-3, and 4-4.

²⁹The cases listed here are all United Nations-sanctioned interventions. United Task Force (UNITAF) was an American-led operation in Somalia in 1992 and 1993 to create a protected environment in which to deliver humanitarian aid. Operation Uphold Democracy was an American-led operation in Haiti in 1994 and 1995 designed to remove the military regime established after the 1991 Haitian coup d'état. United Nations Assistance Mission for Rwanda (UNAMIR) was multinational-led and took place in Rwanda from 1993 to 1994 to aid the peace process between the Hutu-dominated government and Tutsi-dominated rebels. United Nations Transitional Administration in East Timor (UNTAET) was also multinational-led and served as an interim civil administration between 1999 and 2002. Finally, United Nations Interim Administration Mission in Kosovo (UNMIK) was largely European-led and intended to ensure peaceful conditions for life in Kosovo and advance stability in the western Balkans.

Fundraising

As discussed previously, fundraising activities are fundamentally important to international relief organizations and the non-profit community in general. Frequently, economic studies of non-profit behavior will model these firms as entities that either allocate funds to programs or to raising revenue for programs. Castaneda et al. (2007), for instance, assume three forms of expenditures by non-profits—program services, promotional expenses, and administrative expenses—and show that increased competition will also increase the fraction of donations used for promotional expenditures (i.e., fundraising and marketing). In addition, Aldashev and Verdier (2009, 2010) develop economic models that explore the structure of international relief NGOs based on fundraising decisions, observing that, for example, national and multinational NGOs can only coexist if the humanitarian market and returns to scale on fundraising are sufficiently large.

As shown in Figure 4-5, the average FER for the largest 25 international relief organizations in the US has been decreasing over the last two decades, to approximately 5% of total expenditures today. This is coupled with a decrease in concentration as seen in Figures 4-9 and 4-10, which generally suggests an increased competitive environment. Interestingly, this observation is counter to some suggestions in recent literature regarding the topic of fundraising and competition that, as competition increases, so too will expenditures to fundraising activities. Notably, as mentioned in the paragraph above, Castaneda et al. (2007) observe through their model that an increase in competition amongst non-profits will increase the fraction of donations used for promotional expenditures. Further, an article from *The Economist* (2000) at the turn of the millenium suggests that competition in the international relief sector has forced NGOs to focus on fundraising rather than serving beneficiaries:

“In the now-crowded relief market, campaigning groups must jostle for attention: increasingly, NGOs compete and spend a lot of time and money marketing themselves. Bigger ones typically spend 10% of their funds on marketing and fund-raising... The focus of such NGOs can easily shift from finding solutions and helping needy recipients to pleasing their donors and winning television coverage.”

However, as mentioned above, observations from this analysis suggest that although competition has theoretically increased due to a decrease in sectoral concentration, fundraising expenditures have instead *decreased* relative to programmatic expenditures. This can be explained in four ways. First, the international non-profit relief sector has assumed “free-market” characteristics, where increased competition has forced NGOs to compete on the quality of their services rather than fundraising activities. Second, there could be parallel changes in the non-profit environment—such as improved modern media technologies (e.g., the Internet) or donor retention—that have allowed fundraising expenses to drop even as competition has increased. Third, the returns to scale on fundraising are large—that is, the larger the organization, the more revenue it can acquire per fundraising dollar. And fourth, fundraising activities serve as *strategic complements* to one another—that is, the returns on fundraising activities increase with the effort exerted by other non-profits.

Given these four explanations, this paper argues that this phenomenon occurs due to some combination of the final three. It is unlikely that the first explanation is sufficient since humanitarian organizations do not typically compete on service quality due to the inherent difficulties in conveying performance to donors. The last three, however, provide reasonable conclusions, and in particular the fourth explanation offers some interesting implications for this market. Aldashev et al. (2012), for example, uses an economic model to explore the sustainability of coordination between non-profits in the international relief environment. Specifically, the authors

observe that if fundraising activities are strategic complements, then full coordination and stability is possible amongst groups—that is, alliances can be formed. Further, as noted in their study, this insight is important to take into account when considering governmental policies meant to encourage or discourage competitive behavior amongst non-profit organizations.

Lastly, in regards to the observation that different international relief organizations have varying MBF values that are linear in nature, there were no examples observed in this study from either academic or organizational literature that refer to this phenomenon. Though there appears to be a linear relationship between fundraising and total acquired revenue by these organizations to varying degrees, it would be presumptuous to define total revenue as *linearly dependent* on fundraising expenses for two reasons. First, because the total expenses of these organizations are so heavily correlated to their total revenue, this relationship would appear linear if the firm fixes from year to year the percentage of total expenses that it places towards fundraising activities.³⁰ Second, as mentioned previously, this analysis fails to isolate total revenue into its cash and GIK components. This is particularly important as the majority of international relief organizations, including those that focus on GIK distribution, will only fundraise for cash.

Sources of funding

From Figure 4-8, it was observed that direct public support—that is, contributions received directly from individuals and foundations—represents the largest source funding to the top 25 international relief non-profits in the US at around 70% in 2010,

³⁰For instance, if an organization decides to commit 5% of its total expenses to fundraising, and assuming total expenses rise relative to total revenues (which they certainly do in this sector), then the organization's fundraising expenses will be linearly dependent on its total revenue.

and appears to be growing. Government grants made up approximately 24% of these organization's funding in 2010 and also appears to be growing, while indirect public support—that is, contributions received through federated fundraising campaigns—made up only 6% of funding and is on the decline. Thus, this dataset suggests that direct private giving from individuals, foundations, and corporations is the most important form of giving to the largest international relief organizations.

There are a number of literary sources that support this observation. For instance, Rose-Ackerman (1996, pp. 705) notes that compared to other countries, private giving is particularly important to the United States non-profit community in general:

“The relative importance of public funds, private gifts, and fees or charges differs across countries. Nowhere is private charity so important as in the United States. In most European countries nonprofits are heavily dependent on public money, although fees and charges are also important in some areas.”

Adelman (2003) goes a step further, claiming that those who criticize the US for providing a low level of international aid relative to national income fail to take into account private donations, which have far surpassed government contributions. Thus, the author argues that the future of foreign aid and assistance demands an approach that brings private giving into the US government's strategic planning. Interestingly, Klein and Harford (2005) contest this point, claiming that while private financial flows are certainly having a large and growing impact, to speak of the privatization of foreign aid as Adelman (2003) does is inaccurate since developing country governments borrow the majority of their debt from official sources. However, the largest organizations observed in this study—such as AmeriCares, Food for the Poor, World Vision International, etc.—are primarily engaged in shorter-term humanitarian efforts as opposed to longer-term international development activities; thus, this study affirms the assertion that private financing is the most important

source of funding for humanitarian and international relief activities amongst the largest 25 organizations in terms of revenue.

Concentration

This section attempts to explain the three periods as identified in Figure 4-11, which plots total sectoral revenue and concentration with respect to time, given recent literature on this sector. The following section will focus directly on the question of whether this market exists in a state of excessive competition or cartelization.

Between 1989 to 1998 it was observed that the market experienced a period of deconcentration and marginal growth in revenue. This paper submits that this deconcentration occurred as a result of an increasing number of humanitarian organizations offering services at this time, which essentially diluted the market shares of the largest firms. Further, this expansion was likely a result of a spike in violent civil conflicts that occurred globally at the end of the Cold War as documented by Fearon and Laitin (2004) in response to the United States and Soviet Union withdrawing financing to states formally used for political leverage, as documented by Macrae (2002). Additionally, during this time the United Nations implemented the *Agenda For Peace* doctrine, also referenced by Macrae (2002), which essentially served as a task-expansion tool for the sector as a whole.

Next, beginning in 1999 and up to 2008, the market saw a surge in funding, and particularly to the largest international relief organizations as seen in Figures 4-2 and 4-3. This aligns with the United Nations Interim Administration Mission in Kosovo (UNMIK), which was established after the North Atlantic Treaty Organization (NATO) began its bombing campaign in Yugoslavia in 1999. UNMIK was a large-scale operation led by primarily the United States and European powers, and in-

ternational relief organizations played a significant role in providing services to those affected by conflict in the region. This surge in funding continued into the 2000s, where United States and allied military operations in Afghanistan as well as Iraq paved the way for humanitarian organizations to assist in development activities in impacted communities. Notably, the importance of these conflicts to the humanitarian community is well documented in recent literature. For instance, Fearon (2008) notes that since the early 1990s the majority of emergency aid has been allocated to a small number of high-profile cases—such as the former Yugoslavia, Afghanistan, Iraq, and Sudan—that received the attention of the US government and UN Security Council. Further, Macrae (2002) argues that the events in Kosovo in 1999 cemented the newly-formed association between humanitarianism and security.

Finally, the drop in funding to international relief non-profits between 2008 and 2010 can likely be explained as a result of the global financial crisis of 2007 and 2008. Blackwood et al. (2012) note that as the recession hit the US economy, giving to the non-profit community as a whole declined significantly; in fact, the authors remark that international and foreign affairs organizations experienced the greatest slowdown in growth at this time. This paper argues that the reason for this result is due to the perception that international relief is a luxury good by governments and the general public in times of recession.

4.3.2 Competition or Cartelization?

Two distinct views have formed in regards to the competitive nature of the humanitarian marketplace over the last decade. The first, and most common, is that this market exists in a crowded state of excessive competition. Smillie and Minear (2004, pp. 183) put this view in its most blunt form:

“In today’s humanitarian world, the shortage of money, combined with donor earmarking, has created a dog-eat-dog competition that is as relentless as it is unconstructive.”

In agreeance with the sentiments of Smillie and Minear (2004) but perhaps less harsh, Cooley and Ron (2002) argue that the behavior of international humanitarian organizations and NGOs can be explained by incentives and constraints resulting from an increasingly dense competitive marketplace. Specifically, the authors identify three sources of institutional failure given this market—competitive bidding, principal-agent problems, and the multiple-principals problem—and offer examples of how these failures played out in three separate case studies in Kyrgyzstan, the Democratic People’s Republic of Congo, and wartime Bosnia. The authors propose that the growing number of international organizations and NGOs in this sector increases uncertainty and insecurity for all other organizations. Ultimately, Cooley and Ron (2002) suggest that excessive competition forces these organizations to act in rent-seeking ways, negatively impacting the transactions between donors, relief organizations, and beneficiaries.

The second camp in regards to competition in this sector suggests quite the opposite—that this market is in a state of oligopoly or cartelization—and is less referenced in literature. One example is provided by Stoddard (2003), who suggests that a handful of large and influential organizations, such as Médecins Sans Frontières (MSF), Oxfam International, and World Vision International, dominate the market. Further, she notes that these organizations tend to be composed of multiple national affiliates under various forms of confederation, and also occupy specific niche markets—for example MSF in health and Oxfam in water and sanitation.

A more assertive study of the cartelization issue, however, is provided by Easterly (2002). In a working paper, appropriately titled “The Cartel of Good Intentions,”

Easterly argues that the international market for aid does not suffer from over-competition and under-coordination as per popular belief, but rather from under-competition and over-coordination. Essentially, the author suggests that the efficiency and effectiveness of foreign aid delivery has been hindered by large, bureaucratic international relief agencies, and because these agencies coordinate activities—what he describes as “collusion”—they end up “raising the price and restricting the quantity of foreign aid service” (Easterly, 2002, pp. 12).

It would be presumptuous to extend the argument made by Easterly (2002) to the non-profit community, since his paper concerns government agencies as opposed to the sector as a whole. However, the idea that the market for humanitarian activity is dominated by a small number of large organizations is at the very least worthy of discussion, and interestingly, the observations from this dataset concerning this issue suggest that the humanitarian marketplace may assume characteristics that are both indicative of excessive competition *and* an oligopoly.

In arguing for excessive competition, the H-HI of this sector indicates that it is currently, and has been since at least 1989, in a highly competitive state in strict regulatory terms. Department of Justice guidelines regarding concentration for antitrust cases defines an unconcentrated market as one with an H-HI below 0.15, a moderately concentrated market being between 0.15 and 0.25, and a highly concentrated market being above 0.25 (US Department of Justice, 2012). However, this market only breached an H-HI of 0.07 in 1989, and has since resonated about an H-HI of approximately 0.06, as seen in Figure 4-10. It is therefore safe to say that, strictly speaking, the international relief market in the US has been highly unconcentrated since the end of the Cold War.

At the same time, however, the concentration ratios for this market, as seen in Figure 4-9, indicate that this H-HI may in fact be undervalued. Notably, the firm-

four, firm-eight, and firm-25 ratios for international relief non-profits align better with those of the aircraft engine and engine manufacturing sectors than the machine shop sector. This observation can perhaps be best justified by the large growth in the *number* of relief non-profits that make up the “tail-end” of this market, and are growing slowly in regards to their *revenue* when compared to the largest organizations, per Figure 4-4. There therefore exists a situation where a small number of large organizations are acquiring revenue faster than the rest of the sector; however their total market shares are decreasing due to the shear volume of newly-arriving entrants. Thus, this analysis suggests that the international relief market does not sit *between* a state of excessive competition and cartelization, but rather in some mix of the two. The following sections will attempt to determine what this mix is, and provide an original characterization for the competitive model of this type of market.

What is a cartel?

A cartel serves as a group of competing firms that agree, in whatever manner, to fix prices, marketing, and production within the group. They can exist illegally, legally within international jurisdiction, legally within a single national jurisdiction, or legally within an export-only context (Levenstein and Suslow, 2006). For instance, Sanburn (2012) identifies the Federation of Quebec Maple Syrup Producers (FPAQ), which produces approximately 77% of the world’s maple syrup, as an interesting example of a domestically sanctioned and legal cartel. Since the supply of maple syrup is highly dependent on the weather, production sharply varies from year to year. Further, because maple syrup is not an essential food item, demand is also highly irregular. Thus, to stabilize prices, FPAQ will keep the price of syrup artificially high in good production years, and artificially low in poor production years.

For the purposes of this study, however, illegal cartels—that is, those that are not officially sanctioned under domestic or international laws—are of primary concern. Firms can choose to illegally establish a cartel for a number of reasons, the ultimate goal being to limit competition in the market in order to increase or stabilize profits. Additionally, firms can coordinate a cartel in one of two distinct ways, as described by Harrington (2008). First, they can engage in explicit collusion, where firms directly and obviously communicate in order to coordinate activities. Second, they can engage in tacit collusion, where firms are able to coordinate their activities through some mutual understanding without the means of direct communication. In regards to antitrust law in the United States, a cartel is only illegal if there is evidence that firms have explicitly colluded with one another; economic indicators in and of themselves do not provide sufficient evidence of guilt (Harrington, 2008, pp. 215).

Detecting cartels

The process by which firms in a market are screened for collusive tendencies requires economists to play the role of “detectives” (Harrington, 2008, pp. 213). Essentially, cartels can be discovered through structural and behavioral methods by investigating the conduct of firms suspected to be involved in either explicit or tacit collusion. Structural methods, according to Harrington (2008), concern the identification of markets with traits that are conducive to collusive action, such as where there are a small number of large firms, homogeneous products, and stable demand. Behavioral methods, on the other hand, involve observing the means in which firms coordinate activities or the end result of coordination, which is most often discovered by some form of direct communication between parties in collusive firms. Alternatively, the behavior of cartelized firms can be revealed by market impacts of coordination. For

instance, Harrington (2008) offers a number of “markers” of collusive behavior:

- Under certain conditions, the variance of price is lower under collusion
- Under certain conditions, prices are more strongly positively correlated under collusion³¹
- Under certain conditions, market share is more stable under collusion
- Under certain conditions, a firm’s market share is more negatively correlated over time under collusion relative to competition—that is, “market sharing”

In regards to limitations, Harrington (2008) reveals two main weaknesses in detecting cartels through such methodologies. First, existing collusive theory models do not distinguish between tacit and explicit collusion. This is somewhat problematic, as tacit collusion is not subject to antitrust penalties in the same way that explicit collusion is. Thus, Harrington reasons that firms who choose to explicitly collude do so because either they were unable to tacitly collude, or the incremental profit from explicit collusion exceeds those expected penalties if discovered. Second, collusive theories do not take into account that members of cartels may actively seek to avoid arousing suspicion among buyers, competitors, or antitrust authorities.

³¹Harrington (2008, pp. 222) provides an example of a cartel being identified through observation of this marker—specifically, firms bidding for Oklahoma Highway Department (OHD) asphalt contracts were suspected of colluding between 1954 and 1965 through behavioral indicators. In his words: “During the time of suspected collusion, bids were identical and, beginning in 1957, were constant at 10.25 cents a gallon. With identical bids, the OHD awarded the contract to the nearest firms to the job site in order to minimize the delivery costs incurred by the state, which, it was later argued, acted as a market allocation scheme. During the same time period, these suppliers made bids and won contracts in other states at an average price of only 6 cents a gallon, and furthermore the uniformity in bids in Oklahoma was not observed there. It was estimated that the maximum freight cost for these Oklahoma contracts was 2.48 cents a gallon, which meant that any of these firms could have won additional contracts with a price of 10.24 cents a gallon and, even if they absorbed freight costs, would receive a net price of 7.76 cents a gallon, exceeding the price of 6 cents that these same firms bid in other states.”

Response leadership and the competitive fringe

As mentioned above, the international relief non-profit market is perhaps structured in a way that mixes excessive competition with an oligopoly. To serve as a comparable reference, D'Aspremont et al. (1983) describe the *price-leadership model*, which is widely supported among the forms of market organization in which collusion is assumed and cartelization is possible. In this model, either a dominant firm or small group of dominant firms imposes a selling price, which is then adopted by what is referred to as the “competitive fringe” of small producers, who are forced to also adopt this price. Firms in this model are only given two strategies—either they join the competitive fringe and behave as price-takers, or they join the cartel where they jointly maximize profits.

Although this model is grounded on the idea that firms in a market compete on price and seek to maximize profits, which is not the case in the non-profit community, it does provide insight into how the international relief sector may be organized. This paper argues that the international relief market is composed of a relatively small number of large organizations that essentially serve as an oligopoly, with a tail-end that constitutes the competitive fringe.³² Instead of maximizing total profits, these firms seek to maximize total revenues, and this study has shown that they have been successful at doing so especially since 1999. Rather than setting price, they set the conditions for action and coordinate the response in communities who demand relief—that is, the largest and most well-known organizations are the most influential in terms of how goods and services are provided post-crisis, and in so doing set the scene for the contribution of the competitive fringe. While it is not suggested that

³²This paper hesitates to choose a specific number of firms that make up this oligopoly; however, it is interesting to note that in 2010 the top 25 firms in terms of revenue in this market had acquired 83% of total donations, while only constituting approximately 1% of the total number of firms.

explicit collusion exists amongst these firms, it is well established that the largest and most influential NGOs have significant leverage into how responses to crisis are managed. This market structure thus exists in the form of a newly defined *response-leadership model*, which exhibits the following characteristics:

1. In the response-leadership model, firms are either part of the oligopoly or competitive fringe
2. Firms either exist in the oligopoly or competitive fringe given their relative size and influence
3. Members of the oligopoly will seek to maximize total revenues by coordinating the response in a way that favors firms within the oligopoly, given the nature of the crisis
4. Members of the competitive fringe will assume the response conditions as established by the oligopoly, competing for residual funds provided by government and public sources, as well as the oligopoly itself

Analytical limitations

There are three main limitations of this analysis that must be highlighted. First, due to time and financial constraints, the amount of data collected from the NCCS for this study may be insufficient to draw conclusions on the market as a whole. Essentially, this study only used a small number of IRS Form 990 data fields for the largest 25 organizations through public means, though ideally it would have collected a greater number of data fields for *all* international relief non-profits claiming tax-exempt status in a given year. This would allow for greater inferences regarding the structure of those firms not in the top 25—that is, the tail-end of the market. For example, if data fields concerning cash and gifts-in-kind were also collected for all organizations, a stronger conclusion could be drawn regarding the impact of fundraising expenses on donations to firms in various revenue brackets.

Second, inferring the competitive nature of markets from size and concentration observations alone can be problematic. For example, Bikker and Haaf (2000) argue that measures of concentration do not warrant conclusions regarding the competitive performance of markets, and that even in highly concentrated markets, such as the banking sector, competition can be strong. Additionally, in highly unconcentrated sectors competition can be weak—for instance, if there is a high degree of geographic dispersion between competitors. Thus, one should be careful to draw definitive statements regarding competition in markets from metrics alone, and should consider other competitive forces as well.

Finally, and perhaps most importantly, this study has not observed any examples of non-profit firms in any sector being charged with explicitly or tacitly forming a cartel beyond the argument provided by Easterly (2002)—thus, this analysis has no previous cases from which to establish a foundation. However, it appears that from a structural standpoint it would be inherently difficult for non-profits to establish formal cartels strictly speaking, simply because the nature of the philanthropic market will not allow for it—firms cannot compete on price, they offer an extremely heterogeneous variety of goods and services, and the demand for their product, particularly in the international relief environment, is often highly irregular. However, if the international relief market is regarded as a combination of smaller niche markets—such as food, water, health and sanitation, shelter, etc.—and knowing that many of the largest firms fall within a specific niche, then this hypothesis becomes more viable.

4.3.3 Policy implications

The observed characteristics of the international relief non-profit market illuminate a number of implications for policy, especially in regards to the competitive environ-

ment of this sector. If we are to assume the response-leadership model provides a sufficient means by which to study this market, then this structure promotes both positive and negative outcomes. First, competition in this sector can be viewed in a good light for the same reasons that the competitive free-market is ideal—namely, competition promotes innovation and allows for consumers to make choices that better align with their demands. Additionally, in regards to competition based on marketing, Grossman and Shapiro (1984) argue that advertising one’s products or services serves a useful social function by improving the matching of consumers to such goods, though under an oligopoly levels of advertising will always be excessive when compared to what is required for optimal social welfare.

At the same time, excessive competition can be viewed as negative. For instance, Klein and Harford (2005) argues that over-competition in the market for aid is a negative outcome for three reasons—(1) that recipient governments may be incentivized to pursue too many small projects at the expense of time and scarce civil service expertise, (2) competition can be distorted by poorly disciplined subsidies that can devalue local markets, and (3) the market for aid does not produce enough meaningful information to allow for meaningful choices by recipients and donors. To add to this point, Rose-Ackerman (1982) notes that, concerning the non-profit community in general, competition for charitable dollars will reduce the overall level of service provision, especially when market barriers to entry are low. In her words:

“Not only will advertising be ‘excessive’ in the absence of entry barriers, but, when the fundraising share enters the donors’ decision-making calculus, the system may be unstable. In addition, charities that are already large will grow larger, while those that have funding difficulties will contract.”

Second, the coordination of activities of the largest relief organizations can be regarded as a positive outcome. For one, the international relief environment is

often described as a free-for-all, where post-crisis uncertainty and the sheer volume of responding organizations will complicate the delivery of humanitarian goods and exacerbate the situation. Thus, leadership is an important trait in such responses.

However, over-coordination can also be negative. Oligopolies, monopolies, and cartels are generally undesired traits of markets in general, mainly because they limit choices of consumers in terms of price, quantity, and quality. Of course, this is why the Department of Justice has standards regarding market concentration and carries out antitrust regulation in the first place.

Thus, the ultimate goal of policies concerning the international relief sector should be to provide a healthy balance between excessive fringe competition and the largest organizations overly dictating movements in the market. This is essentially analogous to a mixture of what Klein and Harford (2005) describe as “productive chaos,” where competition increases efficiency and spurs innovation while allowing for failure. Therefore, the firms that constitute the response-leadership are needed to coordinate activities post-crisis and lobby for growth in the sector as a whole, while the competitive fringe is needed to produce market innovations and pressure the largest organizations to maintain a degree of honesty and accountability.

Chapter 5

Can Performance Measurement Improve the Market for Humanitarian Relief?

“... information, as it regards organization quality, is significant in determining how donors and organizations conduct themselves within the philanthropic, or charitable, marketplace. While a seemingly obvious result on the surface, the way in which information manifests itself is quite unique with respect to other economic markets... in that donors often times can’t experience firsthand the charitable output toward which they contribute. In this respect, information and signals about organizational quality and behavior take on heightened importance...”

—Wardell (2009, pp. 191)

This chapter introduces and briefly evaluates policies concerning performance measurement that may be implemented in the international relief sector. First, the concepts of market design and failure are reviewed, and inefficiencies, inequities, and forms of disorder in the humanitarian marketplace are presented. Performance

measurement policies from a governmental and institutional standpoint are then examined, considering how they might be established, how they would improve market mechanisms, and their limitations and practical barriers to implementation. Finally, the idea that KPIs can serve as voluntary signals of organizational quality in the humanitarian marketplace is discussed in detail.

5.1 Designing and improving markets

An important concern of public and institutional policy is the design of markets when the first welfare theorem, summarized by Oye (2012), is violated:

If there is a market for all goods, competition is perfect, information is perfect, there are no transaction costs, and there are no externalities, then free markets will lead to a Pareto-efficient outcome.¹

Notably, a Pareto-efficient allocation of resources in a market will often consider societal standards in combination with traditional economic efficiency. In particular, the two other factors that go into the calculus of whether a market is “efficient” besides issues of economy include order as argued by Hobbes (1651), and equity as argued by Rawls (1971). Order essentially considers the authority of a state’s legitimate authority over the individual, while equity refers to fairness and distributive justice as defined by government and social standards of the people.

A market may “fail” by standards of economy, order, and equity in a number of ways—for instance, due to anti-competitive behavior of firms, poorly defined property rights, positive and negative externalities, asymmetric information, or issues of coordination. Roth (2009), who won a Nobel Prize in economics in 2012 for his work

¹A “Pareto-efficient” economic allocation, introduced as a concept by Pareto (1906), is one where no one can be made better off without making at least one individual worse off.

on market design, argues that there are three reasons markets fail. First, markets must provide *thickness* in that they need to attract a sufficient number of participants to transact with one another. Second, they must overcome the *congestion* that thickness brings by providing opportunity to allow participants to consider enough alternative possible transactions. Finally, markets must be *safe* and *simple* in that they make it convenient to participate in the market, as opposed to transacting outside or engaging in strategic behavior that will reduce overall welfare.

Solving these issues is no simple task. People frequently have different opinions on the standards of society in regards to markets, while governments frequently have different views on the state's role in maintaining authority over its population and commerce. Additionally, other welfare-reducing factors may seep into the market design and policy-making process, such as issues of collective action or bureaucratic politics. Still, it is a decent exercise to investigate inefficiencies, inequities, and disorder in marketplaces to help identify policies that may improve their design.

5.1.1 Proposed inefficiencies, inequities, and disorder in the humanitarian marketplace

Given the three roots of market failure cited by Roth (2009) and discussed above, the humanitarian marketplace likely suffers from issues of congestion. For one, the market certainly does not suffer from issues of thickness or simplicity, as there are thousands of humanitarian organizations that perform a wide variety of activities, and it would be difficult to charge any of these organizations directly with anti-competitive behavior. Instead, it is more likely that donors are not provided sufficient opportunity to analyze market choices, since humanitarian organizations know significantly more about the quality of their operations than others.

Specifically from a performance measurement perspective, the following list summarizes the inefficiencies, inequities, and disorder that appear in the humanitarian marketplace due to issues of congestion and asymmetric information. Some of these issues are not necessarily solvable; for example, it may be impossible to arrive at pure definitions of “well” and “poorly” performing humanitarian organizations from a supply chain perspective. However, this list instead serves the important purpose of shedding light on how improvements in this market can be directed.

1. Difficulties in quantifying and comparing operations across multiple firms
2. Lack of definition of what constitutes a humanitarian organization that performs “well” or one that performs “poorly”
3. Difficulties in disbursing funds to organizations on a merit basis and filter out “poor” performing organizations—that is, allow for failure—from the market altogether
4. Hinderance of growth of smaller, effective, and efficient organizations due to oligopoly and funding capture amongst the largest organizations
5. Lack of understanding amongst donor community and general public of firm operations and quantitative results to beneficiaries

5.2 Proposed performance measurement policies

Policies made to correct for market inefficiencies, inequities, and disorder in the market for humanitarian relief primarily come from two domains—government regulation and institutional action. This section highlights a few proposed policies from both perspectives, how they might work in practice, and their limitations.

Regulation calls for the government to command and control activity in the marketplace in order to influence the structure and conduct of firms in the sector. Since regulation cannot improve the economic performance of non-profits in terms of margin and stakeholder value (since these would require a bottom line), regulation can instead be used as a tool to enhance funding mechanisms in this sector.

Institutional action, on the other hand, refers to steps that firms within the sector might take on their own accord to improve these mechanisms—that is, self-regulation. While government regulation represents a “top-down” approach to organizational change, institutional adaptation represents a “bottom-up” solution where the behavior of one firm or a group of firms influences the behavior of others. In effect, institutional policies can be viewed as a more natural approach to improving the market compared to direct command and control regulation.

5.2.1 Voluntary release of performance data

The first policy highlighted here concerns the voluntarily release of performance data from humanitarian organizations to donors or the general public. This data could be in the form of well-known and somewhat standardized KPIs, such as dock-to-stock time or warehouse usage ratios, however they could also be in the form of large outputs of unfiltered data that can then be analyzed.

Of course, voluntary inherently implies a lack of control and therefore this policy can be viewed as an institutional approach to improving the humanitarian marketplace. Specifically, there are three mechanisms at work under this approach. First, the voluntary release of data would improve sectoral accountability across the board—from donors to other organizations, and to direct beneficiaries of aid. It would also allow donors, researchers, and the public a means to better identify

poorly- from well-performing organizations. Finally, if enough organizations were to release logistics and supply chain data, the humanitarian community could arrive at a better consensus of *what* exactly constitutes a successful relief chain.

At the same time, however, the voluntary release of data brings up a number of issues. First and most obviously, many organizations view data as proprietary and would not be inclined to release it publicly (though they may be more inclined to release it to researchers under conditions of anonymity). Further, many humanitarian organizations do not capture sufficient data on their operations, and even if they did, it would be difficult to characterize a successful humanitarian organization in a sector populated by extremely heterogeneous firms.

5.2.2 Industry-wide standards

Implementing industry-wide standards on firm behavior could provide a means to improve the market by forcing humanitarian non-profits to meet decided benchmarks of conduct. Standards are frequently agreed upon in other industries in the US and worldwide—for example, the American Society of Mechanical Engineers (ASME) acts as a governing body for the mechanical engineering sector, organizing standards and codes of conduct to promote industrial competency.

A society of international relief NGOs would allow for organizations and their stakeholders to meet in an open forum and arrive at mutual standards that would benefit the industry as a whole and provide donors a better sense of how the conduct of a specific firm matches up with the rest of the market. Like the voluntary release of data, promoting industry-wide performance standards would be a bottom-up institutional approach to improving market mechanisms. One major limitation to this approach, however, would be the difficulty in enacting such standards.

5.2.3 Club formation

Forming organizational “clubs” provides comparable benefits to institutional societies that implement industry-wide standards, the key difference being that clubs can choose to be highly selective and thus signal greater quality to potential donors. Non-profit clubs are not a new topic and have been discussed previously in academic literature. For instance, Gugerty (2009) examines voluntary accountability programs and standard-setting programs of non-profit organizations, arguing that these programs are essentially collective action institutions designed to signal value to donors and other stakeholders.

Yet forming a club does not necessarily imply superior performance or quality in and of itself. Notably, Gugerty (2009) in her study observes that the primary distinction between a strong and weak standard-setting program is the use of disclosure or verification to enforce compliance. Thus, while voluntary humanitarian relief clubs can signal quality to donors, their compliance and verification mechanisms (e.g., annual auditing) must be strongly built to maintain credibility.

5.2.4 Third-party monitoring schemes

A third-party performance measurement monitoring scheme would consist of some third-party organization or institution who serves as an audit for and grader of humanitarian non-profits. This can serve as either a top-down regulatory approach—if government required such activity—or a bottom-up institutional approach—if evaluating agencies arise independently.

In fact, third-party monitoring schemes already exist in the non-profit community to some degree, most notably with online services such as GuideStar and Charity Navigator. These organizations essentially serve as independent evaluators of chari-

ties, providing ratings on their financial health, accountability, and transparency. A further step would be to provide analysis on the *performance* of charities and perhaps their logistics activities—however, this is problematic due to the inherent difficulties with judging performance and aggregating across various types of non-profits.

5.2.5 Mandated release of standard performance metrics

The final approach mentioned here is the governmental mandate for humanitarian organizations to release performance metrics. This could come in the form of a document similar to the IRS 990 Form, or could even be another page attachment to this file. This would of course be a top-down regulatory approach to improving the marketplace by forcing relief firms to disclose their operational performance and allowing better differentiation between quality and non-quality firms.

One limitation of this approach, however, is that whatever measurements or metrics required by regulation must come in a standardized format. This would likely be difficult to pitch since humanitarian organizations, as highlighted above, engage in a variety of different activities in different ways, and thus it would be problematic to judge quality across these firms. Nevertheless, there are likely to be some metrics that are relevant to *all* international relief organizations, though further research needs to be done on what these metrics might be.

5.2.6 Limitations and practical barriers

There are a few major limitations and practical barriers to implementing institutional and regulatory policies that are of particular note. In regards to the bottom-up institutional approach, for instance, firms in the international relief sector would need the incentive to release proprietary data or established industry-wide standards,

perhaps beyond pure arguments of transparency and accountability. In addition, any such policy would need to somehow separate firms in the market by mission, the types of activities they carry out, and how they do so.

Further, in regards to the top-down governmental approach, Aldashev et al. (2012, pp. 3-4) note that the very nature of non-governmental firms makes it inherently problematic to enforce regulatory control. In their words:

“... given that nonprofit organizations are also non-governmental, the ‘top-down’ government intervention is unlikely to be effective, because it would [be] perceived as undermining the very essence of these organizations. Edwards and Hulme (1996) argue that the stronger are the links of nonprofits with the government agencies, the less effective the nonprofits are in pursuing independently their missions.”

At the same time, however, Aldashev et al. (2012) argue that government in fact has several tools that can affect the competitive equilibrium of the international relief sector—for example, by subsidizing or taxing the fixed costs of setting up a non-profit (i.e., establishing market entry conditions), providing matching grants to non-profits proportional to private donations collected, or influencing the overall size of the market by varying the tax deductibility of charitable donations. Thus, there are means in which governmental approaches can provide legitimate solutions to addressing inequities and inefficiencies in this market.

5.3 KPIs as a signal of organizational quality

5.3.1 Signaling theory

Signaling as an economic theory was introduced in the 1970s by Spence (1973), who developed a model demonstrating how the investment in signals, or observable and

alterable characteristics, can convey information to others by increasing the certainty of their perceptions. The example used by Spence concerns the job market, where hiring essentially serves as an investment of the employing organization under a great deal of uncertainty. Because the employer has difficulty in evaluating the productive abilities of the potential employee at the time of hiring, its decision to hire an individual (and at what wage) must be based off personal characteristics of that individual. One of the primary means to signal productivity in the job market is through one's education—since education has costs in terms of time and effort, only those who are qualified and capable will choose to invest in receiving a degree. Thus, an educational signal allows employers a greater deal of certainty when evaluating a potential employee's workplace productivity.

Interestingly, there have been a number of studies that apply signaling theory to the non-profit sector. For instance, Glazer and Konrad (1996) argue that observable charitable donations can serve as a tool to signal wealth or income to others. The authors create an economic model assuming that individuals to varying degrees have a desire to demonstrate wealth, perhaps because they prefer to socialize with those of the same or higher social brackets. This model implies that individuals who donate to signal their income will not make anonymous donations, which is supported by empirical evidence that, of the 1,950 entries to the 1991 Yale Law Report naming alumni donors to the Yale Law School Fund, only four were anonymous. While this observation can not be generalized across all facets of non-profit activity, it does indicate that to at least some degree individuals may donate to signal status.

Another study that concerns signaling in the non-profit sector is by Gugerty (2009), who argues that non-profit voluntary accountability and standard-setting programs signal information of organizational quality to external stakeholders. The author examines 32 non-profit accountability programs, acquiring data on program

standards, fees, certification and monitoring mechanisms, disclosure rules, and sanctioning mechanisms, observing that the key distinction between strong and weak accountability programs is the use of disclosure or verification mechanisms that enforce compliance. Adding to this conclusion, Reinhardt (2009) surveys non-profit activity in Brazil, arguing that donors give to organizations with higher levels of professionalism and accountability, which are represented by signals. Essentially, these papers imply that donors value transparency and accountability of non-profit organizations, and that these characteristics can be displayed externally to the market.

Perhaps the work most related to this thesis, however, comes from Wardell (2009), who examines how signals of quality affect donor and organizational decisions in the humanitarian space. In his dissertation, the author develops two models and tests his results using an observational dataset provided by GlobalGiving, an online charitable marketplace. The first model uses game theory to identify under what circumstances humanitarian relief organizations of high- and low-productivity will choose to signal their work to donors. Notably, Wardell observes that the decision a firm makes on whether or not to signal quality will depend on the ratio of available donations to the number of relief organizations acting in that particular environment—as this ratio decreases, the incentives for a high-productivity organization to signal its quality to donors will increase.

Though the work by Wardell (2009) does well to quantify when humanitarian organizations will choose to signal quality, it rides on the assumption that these firms are *capable* of signaling quality to donors. This thesis has argued that this assumption is problematic, and that humanitarian organizations in fact have a difficult time in portraying their performance to donors in a meaningful way. Thus, an extension of the study by Wardell, provided below, is whether or not KPIs as outlined in the first part of this thesis provide a means for these organizations to signal quality.

5.3.2 Can KPIs signal quality in the humanitarian space?

A question relevant to this thesis is whether KPIs can serve as an external signal of quality in the humanitarian space. For example, if HHI and others can internally develop KPIs to measure performance and guide strategy, can they also use these metrics as a means to positively distinguish themselves from other firms?

There are two sides to looking at this question which offer different responses. The first is that, *yes*, KPIs can be used as a legitimate marketing tool to aid humanitarian firms by serving as an indicator of quality and accountability. For one, a firm may choose to either make public its supply chain data or its performance metrics—which may also be verified through some third-party means—as a way to advertise to donors, beneficiaries, and the general public. Those organizations who choose to do this may be viewed as more accountable and transparent than those that do not, which serves as a signal in and of itself.

At the same time, however, the single major limitation of evaluating the performance of humanitarian firms is in the variety of activities these firms carry out and how they do so. Through this way of looking at the problem the answer is then *no*, it would be near impossible to use KPIs as a means to distinguish the performance across relief organizations because generalizing their activities is problematic.

As the two sides of looking at the problem produce conflicting results, the true answer must lie somewhere between. First, KPIs *can* be used as a marketing tool by organizations to distinguish themselves from others, and donors should take seriously those firms that choose to advertise this information as it should be regarded as progressive market behavior. However, donors and the general public should be careful to generalize KPIs across different types of organizations—for instance, those that perform short-term response versus long-term development programs, those

that manage mostly cash versus gifts-in-kind, or those that operate in a specific geographic or situational environments and those who do not. Therefore, it is a crucial point to consider performance in the context of how the firm operates, and in fact, a goal of the humanitarian community should be for performance and impact to become a general characteristic of such firms—alongside mission, financial strength, accountability, and transparency.

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Chapter 6

Conclusions and Further Research

“Making money is far easier than giving it away effectively.”

—Warren Buffet, as cited in *The Economist* (2011)

Evaluating an organization’s performance—from either an internal or external standpoint—is no easy task. It is an especially difficult challenge in the non-profit sector, where success is not measured in dollars, activities across similar organizations vary by a wide margin, and donors to causes are inherently disconnected from beneficiaries. This thesis served to provide insight into how performance in the humanitarian environment can be evaluated, and how performance measurement policies might impact the broader international relief market as a whole.

Conclusions

The first part of this thesis illustrated a process by which humanitarian organizations can evaluate their performance. A key performance indicator (KPI) system that focused on logistics operations for Heart to Heart International (HHI) was successfully developed and handed off to the Director of Global Logistics within the

organization. This system was evaluated using criteria as defined by Caplice and Sheffi (1994, 1995), and was argued to be well-balanced and integrated across the organization's logistics functions. The true value of this exercise, however, was in conveying how the top-down and bottom-up approaches to measuring performance can be used to observe a set of KPIs for an organization that merges day-to-day activities of the firm with its overall mission. Although the KPI system illustrated here is specific to HHI's logistics operations, other firms are encouraged to use this approach to develop their own systems.

The second part of this thesis discussed the potential impact of performance measurement on the humanitarian marketplace. Data derived from the National Center for Charitable Statistics (NCCS) was successfully used to model high-level financial trends of the international relief non-profit sector in the United States, and in particular of the largest 25 organizations. This analysis serves as a useful proof of concept, as quantitative information regarding transactions in this market are severely lacking. From this dataset, a number of particularly interesting insights were made, including:

- Claims that the number of organizations in the international relief sector and their total revenues have increased exponentially since the end of the Cold War was validated. The most significant gains in terms of revenue were made by the largest eight firms in the market, yet these organizations also took the greatest hit in funding after 2008.
- Fundraising as a percentage of total expenses for the largest international relief non-profits has decreased over time, from 10% on average in 1989 to roughly 5% today. This is contrary to a number of assertions made regarding this market, and is likely due to a variety of reasons—e.g., improved media technologies, greater awareness and willingness of donors to fund humanitarian activity, the ratchet-effect, donor retention, etc.
- Direct public support to international relief efforts was found to dominate acquired funding of

the largest 25 organizations in this market, representing roughly 70% of their total revenues in 2010. This form of support is continuing to grow, though it remains to be seen where it will level-off with respect to government grants. This is an interesting result as it demonstrates the importance of private financing from individuals, foundations, corporations, and other organizations to international humanitarian efforts.

- The competitive nature of this market was defined in terms of a newly introduced *response-leadership model*, which takes inspiration from the price-leadership model of for-profit firms as described by D'Aspremont et al. (1983). This model is argued to fit the international relief non-profit sector, since the largest organizations continue to raise revenue faster than the rest of the market while the unconstrained growth in the number of total firms dilutes the concentration of these large firms. Thus, an oligopoly exists between the largest organizations who acquire the majority of revenue each year and define response activities for the rest of the market, while those firms who make up the market fringe remain highly competitive.

In regards to performance measurement policies, a number of institutional and governmental approaches were summarized as well as their limitations and practical barriers to implementation. These policies included the voluntary release of performance measurement data, industry-wide standards, club formation, third-party monitoring schemes, and the regulated distribution of an established set of metrics. Specifically concerning the issue of whether KPIs can externally signal quality, the answer is both yes and no. For one, humanitarian organizations can use KPIs as marketing tools to improve their transparency to the donating public and signal their performance in functional areas. However, a universal system that can be used to compare performance across multiple organizations will be hard to come by, simply due to the extreme variety of the strategies of these organizations as well as how they carry out their activities—that is, the very same reason choosing KPIs must be a unique exercise for each firm.

Further research

There were a number of topics tangential to this thesis that would be interesting to study in the future. For one, it would be useful to evaluate how the KPI system developed here impacts HHI's logistics operations and strategy over time—for instance, are there operational improvements and in what areas, do they modify the system, etc. Second, it would be interesting to develop logistics KPIs for the firm's warehouse in Haiti and evaluate the differences between an in-country logistics system and one that is more general. Third, it would be useful to see how this approach plays out for other humanitarian non-profits who operate differently than HHI, an organization that plays a very specific role within the international relief chain.

From the second part of the thesis, a more robust study needs to be performed on the NCCS dataset that was used to analyze the international relief market. Ideally, more data fields would have been acquired for *all* organizations in the Core Data Files, rather than those just in the top 25. This would allow for a better analysis of the tail-end of the market, and thus stronger conclusions in regards to how sectoral concentration affects their behavior. Additionally, this type of study could be performed on other non-profit markets. Since non-profit data transactions are notorious difficult to follow, further studies that attempt to categorize market structures in this way might point to public and institutional policies that improve other sectors.

Regarding the classification of the three periods in this sector given concentration and revenue data, more NCCS data fields would also be useful to monitor what specific categories of organizations—whether by geographic region in the United States, firm focus, etc.—grew over these identified time periods and if there is any way to match up increased giving to specific moments in time. For instance, it would be interesting to determine whether organizations that were heavily involved

in responses to conflicts in the former Yugoslavia, Afghanistan, and Iraq grew quicker relative to others due to the intense political interest in these cases. Ultimately, more data would help better align the quantitative assertions made from this dataset with what has been written in academic and organizational literature.

Further, research on methods to track the flow of money from governments and the general public to non-profits and beneficiaries would be useful. Though the Organisation for Economic Co-operation and Development (OECD) provides a solid repository of data from where governments initially allocate funding, and the NCCS provides good information on where non-profits in the United States receive funds, there is little understanding of how aid trickles down the humanitarian system.

Lastly, it remains to be seen whether humanitarian organizations can use KPIs or systems of metrics as external indicators of quality, and if KPI signaling can actually improve market mechanisms in this sector. Nevertheless, any means used by humanitarian organizations to externally distribute KPI systems will be well-received and positively impact the humanitarian environment in the following ways:

- Improve the alignment of donors—including individuals, foundations, corporations, and governments—with humanitarian non-profits that match their interests and charitable goals
- Increase donor confidence in these firms by providing a better means of what humanitarian organizations do, how they do it, and how motivated they are to improve their actions
- Help to identify poorly performing organizations who adamantly choose not to be transparent or accountable in regards to their operational performance

Evaluating quality, both internally and externally, is a tricky business. Of course, this thesis aimed to move research forward in regards to the measurement of activity in the humanitarian space; however, what would be even better is if it assists, even in some small way, those who dedicate their life to this community and those in need.

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Appendix A

Organizational KPIs Non-Specific to Logistics Operations

In addition to those key performance indicators (KPIs) defined in Chapter 3 that are specific to Heart to Heart International's (HHI) logistics operations, a number of other metrics not directly related to logistics activities were identified as being useful throughout the making of this case study. This appendix identifies and categorizes these metrics into three functional areas—(1) finance and fundraising, (2) monitoring and evaluation, and (3) donor, partner, and community relations. Of course, this list is not exhaustive and merely serves as a starting point for what other types of indicators can be observed for activities beyond logistics and supply chain operations.

A.1 Finance and fundraising

Programmatic expense ratio (PER) The programmatic expense ratio (PER) represents the percentage of total expenses that go directly to programs. This ratio is

particularly important to HHI, as historically it has maintained a high PER relative to other humanitarian organizations, typically on the order of 95% to 98%. Thus, it is suggested that HHI maintain a close eye on this metric since it serves as an important marketing tool to the organization. A PER in the high 90-percent range should be regarded as a positive outcome for HHI, though this benchmark may vary for other organizations due to differences in how their operations are conducted.

$$\text{PER} = \frac{\text{Programmatic expenses}}{\text{Total expenses}}$$

Competitive PER (CPER) Although PER serves as a useful indicator for the organization internally, it is also useful to consider this metric with respect to other humanitarian organizations of similar size and function (i.e., competitors). The competitive PER (CPER) is therefore defined as the PER of HHI divided by the average PER of five competing firms of HHI's choosing, and indicates the extent to which HHI's historically high PER value continues to serve as a competitive advantage of the firm. One major disadvantage of CPER is that it utilizes financial metrics from competing firms, which is of course proprietary information. While the information required to calculate PER of an organization is made publically available through an organization's IRS Form 990, these are not made available until the following calendar year. Thus, CPER will lag behind present day operations.

$$\text{CPER} = \frac{\text{PER}_{\text{HHI}}}{\text{PER}_{5 \text{ competitors}}}$$

Fundraising expense ratio (FER) The fundraising expense ratio (FER) is defined as the percentage of total expenses that go towards fundraising activities. Historically, HHI has maintained a FER less than 1%, which is a positive result for the

organization. Although it is not necessarily a negative indication of performance if an organization's FER rises, it is important for HHI to observe this indicator over time as their marketing potential will be hurt if this value grows unrestricted.

$$\text{FER} = \frac{\text{Fundraising expenses}}{\text{Total expenses}}$$

Cash-to-fundraising ratio (CFR) An organization's cash-to-fundraising ratio (CFR) is defined as the total value of cash acquired by the organization over the past year divided by the organization's total fundraising expenses during that time. Essentially, it serves as an indication for the marginal contribution of each fundraising dollar to the organization's cash assets. For instance, if HHI acquired US\$20,000 in cash donations over a year's time and committed US\$10,000 to fundraising over that same period, then CFR would be 2, meaning that each fundraising dollar brought in US\$2 in cash, on average.

$$\text{CFR} = \frac{\text{Captured cash}}{\text{Fundraising expenses}}$$

A.2 Monitoring and evaluation

Partner response rate (PRR) The partner response rate (PRR) is defined as the percentage of partners responding to external HHI surveys. When HHI delivers product to a partner, they also request for a prediction of the number of beneficiaries served, the satisfaction of the partner with HHI's service, amongst other information. Thus, it is ideal that the organization have a high PRR as this allows HHI to better understand how its products are being used and to what degree HHI maintains contact with partners.

$$\text{PRR} = \frac{\text{Partners responding to external surveys}}{\text{Total partners polled}}$$

A.3 Donor, partner, and community relations

Donor acknowledgment ratio (DAR) The donor acknowledgment ratio (DAR) is defined as the percentage of donors of cash or product to HHI who are acknowledged by the organization for their donation. Thanking donors is especially important from a marketing, branding, and commercial relations perspective. It is highly recommended that HHI seek to improve this metric over time as this will help the organization maintain previously acquired business.

$$\text{DAR} = \frac{\text{Count of unique donors acknowledged}}{\text{Total count of unique donors}}$$

Partner satisfaction ratio (PSR) The partner satisfaction ratio (PSR) indicates the percentage of partners who are satisfied with their orders. Satisfaction can refer to either the timeliness of the order and subsequent shipment, or the quality of product. This metric therefore indicates the extent to which partners of HHI are content with the products and performance of the organization. HHI does not currently collect information on customer satisfaction, though a simple question could be placed on external surveys to partners requesting their level of satisfaction.

$$\text{PSR} = \frac{\text{Responding partners designated as "satisfied" or better}}{\text{Total count of responding partners}}$$

Appendix B

Logistics KPI Survey

The following pages include the logistics KPI survey that was submitted to the staff and board of Heart to Heart International (HHI) in April 2013. The survey consists of 12 questions and is broken up into four parts—background, logistics perceptions, logistics objectives, and performance measurement. A complete analysis of the results of this survey is performed in the top-down analysis section of Chapter 3.

HHI / MIT logistics KPI survey

Page 1 - Background

Heart to Heart International and the Massachusetts Institute of Technology (MIT) are carrying out a joint research project to evaluate how logistics activities of humanitarian organizations can be measured. This 4-part survey asks for your perceptions of Heart to Heart's logistics department and role within the broader humanitarian relief community. It will take approximately 10-15 minutes to complete. Your responses are 100% anonymous.

Please use this page to provide general background information of yourself and role within Heart to Heart International.

*** 1. What is the job title for your current position?**

*** 2. With what department within the organization are you affiliated?**

*** 3. For how many years have you worked or been affiliated with Heart to Heart International?**

*** 4. How often does your role within the organization require you to interact operationally with the logistics department?**

- ☐ I am part of the logistics department
- ☐ Daily
- ☐ Weekly
- ☐ Monthly
- ☐ Seldom
- ☐ Never

Part 2 - Logistics perceptions

Logistics refers to the activities that coordinate the movement of products and services from suppliers to customers. In the humanitarian field, logistics connects donors to beneficiaries. Please comment on your perception of Heart to Heart International's logistics department.

***5. How important is product and gift-in-kind (GIK) distribution to the success of Heart to Heart International?**

- ☐ Not an important activity
- ☐ Not as important as other activities
- ☐ Just as important as other activities
- ☐ Very important activity
- ☐ The most important activity

***6. How much should Heart to Heart charge partners relative to logistics costs (e.g., labor, warehouse costs, etc.)?**

- ☐ HHI provides everything free of charge (covers all costs)
- ☐ HHI covers half its costs
- ☐ HHI recovers all costs (breakeven)
- ☐ HHI generates modest surplus revenue to invest in other activities
- ☐ HHI generates significant surplus revenue to invest in other activities

***7. Briefly state, in your own words, what the main objective of Heart to Heart's logistics department should be (limit 100 characters).**

HHI / MIT logistics KPI survey

Part 3 - Logistics objectives

Heart to Heart International's logistics department is considering 12 performance objectives. Below are two questions about these objectives, which are sorted in the same order for each question.

8. On a scale of 1 (not important) to 5 (very important), how critical is each objective to the organization?

	Not important		Just as important as other objectives		Very important
Ability of supply chain to adapt quickly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accountability and transparency towards donors and partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of wide array of products to partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community involvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Constant development and improvement of supply chain processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct delivery of aid to beneficiaries (as opposed to direct to partners)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good communication between supply chain (logistics) staff and other departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leveraging volunteers for services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low operating costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality and accuracy of orders delivered to partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of available products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time efficiency (as quick as possible)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

HHI / MIT logistics KPI survey

9. On a scale of 1 (not met) to 5 (goals exceeded), how well are the above objectives currently being met by the organization?

	Not met			Adequately met		Goals exceeded
Ability of supply chain to adapt quickly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accountability and transparency towards donors and partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Availability of wide array of products to partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Community involvement	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Constant development and improvement of supply chain processes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Direct delivery of aid to beneficiaries (as opposed to direct to partners)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Good communication between supply chain (logistics) staff and other departments	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leveraging volunteers for services	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Low operating costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality and accuracy of orders delivered to partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quality of available products	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time efficiency (as quick as possible)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Part 4 - Performance measurement

Please comment on how Heart to Heart International can define a successful logistics department. The same performance outcomes are listed in both questions 10 and 11.

10. Heart to Heart's logistics department is currently able to measure the following outcomes. Which would you like to see included in the Heart to Heart monthly report?

- ☐ Accuracy of items stocked in the warehouse
- ☐ Accuracy of orders delivered to partners / beneficiaries
- ☐ Quantity of donations received from donors
- ☐ Quantity of products delivered direct to beneficiaries
- ☐ Quantity of products delivered to partners
- ☐ Quantity of product disposed of due to expiration or obsolescence
- ☐ Number of unique destination countries to which product is shipped
- ☐ Number of unique partners to which product is shipped
- ☐ Number of unique projects
- ☐ Number of unique donors donating product
- ☐ Time between when a receipt arrives at the warehouse and when it is stocked in the warehouse
- ☐ Time between when an order is placed and when it is shipped from the warehouse
- ☐ Total value of donations received from donors
- ☐ Total value of product delivered to partners / beneficiaries
- ☐ Value of product disposed of due to expiration or obsolescence


HHI / MIT logistics KPI survey

11. On a scale of 1 (strongly decreasing) to 7 (strongly increasing), please indicate how each measure should be changing over time.

	Strongly decreasing	Moderately decreasing	Marginally decreasing	Doesn't matter if increasing or decreasing	Marginally increasing	Moderately increasing	Strongly increasing
Accuracy of items stocked in the warehouse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Accuracy of orders delivered to partners / beneficiaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quantity of donations received from donors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quantity of products delivered direct to beneficiaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quantity of products delivered to partners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Quantity of product disposed of due to expiration or obsolescence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of unique destination countries to which product is shipped	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of unique partners to which product is shipped	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of unique projects	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Number of unique donors donating product	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time between when a receipt arrives at the warehouse and when it is stocked in the warehouse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time between when an order is placed and when it is shipped from the warehouse	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Total value of donations received from donors	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Total value of product delivered to partners / beneficiaries	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Value of product disposed of due to expiration or obsolescence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

HHI / MIT logistics KPI survey

12. Are there any additional measures of logistics activity that you would like to see included in the monthly report, even if it cannot currently be calculated by the organization?



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